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No. IV. OF VOL. II., 1934. LONDON, SATURDAY, JULY 28, 1934 Pp. 112—Price 1s.
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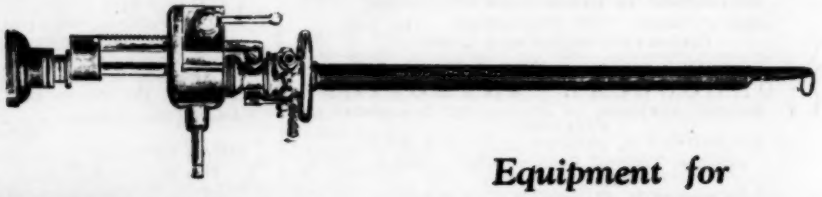

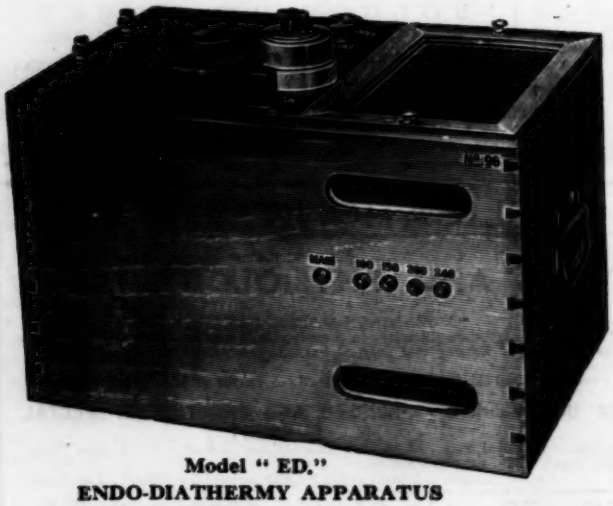

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[Dr. Watson Smith commenced by extending a cordial welcome to Bournemouth to the members of the Association and their accompanying visitors in the name of the medical men of the town and neighbourhood and of the civic authorities of the borough. He recalled that it was 43 years since the annual meeting of the British Medical Association was held in Bournemouth, when Dr. John Robert Thomson, whose name, he said, was impressed upon the benevolent institutions of Bournemouth, occupied the presidential chair, that occasion being the 59th annual meeting of the Association.] With regard to the subject of the present address, the President said that he would begin by defining his subject and outlining the

History of Medical Climatology

In talking of climate we shall not try now to define the term in the Johnsonian fashion as "a space upon the surface of the earth, measured from the equator to the polar circles"; or in the sense used by Sir Thomas Browne, when he wrote (1643) that he was born in the eighth climate; or again, in the popular meaning, as a region differing from another by reason of the temperature of the air. We shall define it in a broader sense, the meaning of the word, modified by time and necessity, indicating all the solar and terrestrial factors and influences which affect animal and vegetable life, including sunlight, atmospheric temperature, humidity and pressure movement of the air, and prevailing winds—the factors which make our climate what it is; and, whilst including airs, also embracing waters and places. My remarks will also refer to the history of medical climatology and hydrology generally, and to the advisability of more frequent use of British spas and health resorts. In the choice of this subject it seemed to me that Bournemouth—fair as it is and so handsomely endowed by nature with beauty, grace, and charm—was a fitting place from which to speak. Alone of its kind and in the front rank of coastal health resorts, this area can claim to have restored health to invalids without number, and to have afforded rest and recreation for the many. Here, in Shakespeare's words, "The clymat's delicate, the ayre most sweet."

THE INFLUENCE OF GREECE

It is generally believed that, in the dawn of civilisation, from the Middle East and from the shores of the Mediterranean, migrations of a people, mainly pastoral, took place in consequence of drought, a changed climate causing insufficient sustenance for tribes and flocks; and that thus knowledge spread eastward to China (2300 B.C.)—where even to-day a superstitious belief survives in the malign effects of climatic influences (Fung-Shui, literally wind and water)—to Libya and Egypt, whence to Greece, whither many Egyptian ideas made their way.

In Greece medical knowledge and practice flourished, chiefly in the Cnidos Peninsula and in Rhodes, the "rose-covered" island of the Ægean, where climate and physical influences seem to have been specially studied by the Greek philosophers; and in Cos and at Epidaurus, where the cult of Asklepios first appears. At these places health temples were founded—originally sacred shrines controlled by priests, their sites being chosen, not only from proximity to wells or hot springs, but also with a view to climatic salubrity. At these temples patients would drink the waters and bathe; the sick would flock thither to be treated by the presiding priests, just as cure and relief are now sought by pilgrimage to a holy well. The extent to which such "spas" were used is shown by the provision for entertainment at the health temple of Epidaurus of an open-air theatre capable of accommodating 12,000 and of a stadium for 20,000.

Pausanias, in his "Description of Greece," mentions that whilst visiting Epidaurus he met a traveller from Sidon, who declared his opinion that Apollo was the sunshine and Asklepios, his son, the fresh air. His worship as the god of healing was widely spread among the Greeks. His powers included even that of raising the dead. In his honour temples were built at many places, the most notable, that of Epidaurus, becoming the traditional seat of the cultus of the god, originally probably a form of sun worship.

A salutary belief underlay the religion of Asklepios, that the maladies of the soul could be reached through the subtle gateways of the body; that, in the words of Walter Pater, "the body became but an handmaid of the soul." Thus the Greeks strove for perfect physical development, esteemed even above learning, their artists and philosophers employing their rare talents in the production of beauty and the search for truth. This idea of a *select* humanity was revealed in the Stoic plan of a world of the wise only, and in later Christian times found its expression in the conception of the Church as the only pathway to salvation for the human race.

The earliest surviving treatise on climatology is the chapter "Of Airs, Waters and Places" in the works of the immortal Hippocrates (460–370 B.C.), Father of Medicine, in which he deals with many questions of importance in public hygiene, giving numerous incidental references to the effects of weather and climate, winds, seasons, and localities. At this period Greek art and learning were at their zenith, instructing, edifying, and refining the world as they still ought to be doing. Hippocrates showed an extraordinary grasp of matters relating not only to climate and its causes, but also to the art of medicine; so much so that he founded a system of physic which embraced the results of actual observation in place of the superstition and hypothesis till then obtaining, and dominated medical practice for many centuries.

ROMAN DEVELOPMENTS AND MEDIÆVAL INACTION

In Rome, Scipio Africanus (died 129 B.C.) was one of the first to order the construction of baths. Later, in A.D. 21, thermæ were opened by Vipsanius Agrippa, son-in-law of Augustus and grandfather of Caligula. It became customary to build a large bath over a natural hot spring, attaching to it several smaller baths. The neighbourhood of these became fashionable watering-places. Authors like Petronius and Martial throw much light on Roman bathing. The latter, taking note of the smallest details, describes a visit to the public and private baths, each of which

* Presidential Address (abstract), delivered on July 24th before the 102nd annual meeting of the British Medical Association held at Bournemouth.

had its own regular customers. He watches the masseurs manipulating their patients, and a wily thief awaiting the right opportunity of pilfering from a bather's robe. It was usual for special bathing times to be allotted according to the rank and social status of the bather. Occasionally a bath would be used in common by the sexes; but such mixed bathing was forbidden by Trajan and by his successor Hadrian. In the reign of Justinian (A.D. 527–565), builder of St. Sophia, partitions were put up to separate the Byzantine sexes. During the Roman occupation of Britain spas and health resorts were founded, some of which, like Bath, "remain unto this day." London also had its medicinal wells and baths, the latter being early established there by the Romans.

In the obscure ages which succeeded the fall of the Western Empire the use of mineral springs dwindled, but after the Crusades (A.D. 1096–1272) warm baths again became fashionable, some associated with saints developing into centres of pilgrimage. During the fifteenth century the Greeks fled from fallen Constantinople, leaving their baths behind them for its conquerors, but taking with them into Italy their literature and learning, so that in the sixteenth century Hippocrates's work was again the example to follow in the practice of medicine.

FROM HARVEY UNTIL TO-DAY

At length the immortal Harvey, by his work *De Motu Cordis* (1628), a record of investigation made by the experimental method, overturned the whole theory of the ancients, founding principles and the practice of physic on the scientific basis whereon they now stand. Thomas Sydenham, Father of Clinical Medicine, "a rare man," laid great stress upon the seasonal variations of disease and the relation of disease-distribution to latitude.

At the end of the eighteenth and the beginning of the nineteenth century the climatic dangers of travel were demonstrated by the failure and destruction of the two expeditions into Africa of Mungo Park, himself a surgeon (see his *Travels*). But since the last few years of the nineteenth century a great improvement has taken place in tropical hygiene and sanitation. Many deadly climatic diseases are now known to be of parasitic origin, the constant warm climates of tropical regions rendering them the best breeding-ground for the organisms causing such diseases. Due to the direct effect of climate upon the parasites or their human or extra-human hosts, these diseases are fortunately absent from temperate and cold latitudes.

The second half of the nineteenth century was the scientific age, noted for its advances in medicine and surgery. Consequently, in the present century, many of the worst areas of the earth, where so many of our fellow-countrymen have been "climate-beaten" in the past, have been rendered wholesome and habitable for all races of mankind by pioneer work, done often under great risk to health and life, by colleagues of the profession. Such results have been brought about by the application of methods evolved by the original work of men like Patrick Manson, David Bruce, Ronald Ross, Andrew Balfour, and countless others, true pioneers of Empire, many of whom had passed on, forgotten by their own times, unhonoured and unsung; they constitute a splendid record of self-sacrificing labour on behalf of the civilisation and well-being of mankind, and afford a demonstration of that spirit and genius, the proud heritage and hall-mark of the profession of medicine.

In these days we seem to live in an age of transition, when each man's scientific knowledge and opportunities are expanding and increasing well-nigh beyond belief. Yet we find the same riddles presenting themselves for solution as in previous ages, merely changed in their scientific features. There must always be a demand for proof: a constant testing of our assumptions, investigations, and conclusions, to prove them true or false, and accordingly to receive or abandon them. The doctrines of science, many of which are now admittedly beyond dispute, at first confined to the scattered few, have been gradually gaining general acceptance. By the processes of trial and search for error they are constantly being clarified and corrected. Science, indeed, by its revelation of the established order of things, shares common ground with religion.

[Dr. Watson Smith, alluding to the belief that climate is the most influential of the natural causes controlling the destinies of mankind, pointed out that the chief factor governing climate was isolation, and continued:—]

Airs and Waters

An excessive exposure to light rays, whether natural or artificial, entail fatigue and exhaustion, but it also produces early degeneration of the skin, such as may be seen in sailors. The external ears, the lower half of the face, and the backs of the hands degenerate so as to exhibit a skin become thin, atrophied, and pigmented, upon which are grafted warty growths which, later, may assume a malignant form. Because of immediate and remote risks of over-radiation, caution should be advised in the use of the sun bath and of artificial light baths. But, properly and prudently used, sunlight is of inestimable value. From the point of view of the man of business alone it has been proved that daylight and industrial efficiency are directly proportional, the one measuring the other. Such efficiency may also be encouraged by the creation of a so-called artificial climate, mechanically controlled as to temperature, humidity, and movement of air, promoting ventilation indoors, which should be applicable with advantage to the modern hospital or school, and to places of business or amusement. But the sun is the ruler of all climates and determines temperature, the lessened or increased humidity of which has been used as a practical means of classifying climate as bracing and tonic, or sedative and relaxing: the former including busy places providing entertainment and excitement suitable for those needing bracing-up, an escape from routine business, and change from sedentary work; the latter qualifying resorts favourable to rest and tranquillity, beneficial in nervous complaints, such as insomnia, in high blood pressure, or in disorders of the heart and circulation. There are, however, in the British Isles, all gradations between the two extremes. The term "relaxing," in reference to climate, I use in no derogatory sense such as enervating, but as synonymous with "sedative," indicating the quiet and repose desirable for the relief of these and other conditions of ill-health, and the maladies of old age, compelling a slowing-down of the pace, and encouraging restful days and nights and a reduced metabolic rate.

THE ILL-INSTRUCTED PUBLIC

The ignorance of the majority as to the climate, and so the health resort, best suited for them is notorious. A careful study of an invalid's general state of health and mental traits should be made before recommending the suitable place. Often a climate with frequent but moderate variations will

prove beneficial, the more so if combined with a regular rhythm of rest, sleep, open-air exercise, and a properly supervised and dispensed diet; beautiful surroundings, changes of scene and of manner of life, all helping to encourage the invalid. As our knowledge of applied climatology increases it will be found to be more and more of value as a factor in the successful treatment and diminution, or even elimination, of disease, the results of which, under differing climatic conditions in various parts of the world, and especially of the British Isles and Empire, will thus be tabulated and mapped out.

Waters and baths are to be looked upon as factors accessory to climate, over which they may have a dominating therapeutic influence. Spas frequently specialise in the treatment of particular ailments, and should be classified not only according to type of climate but also upon their therapeutic indications. Mineral waters have their pharmacological action by virtue of their water-content, and of the various contained chemical and physical properties. Some have radio-activity, a property of high value, which is being increasingly utilised in treatment; a quality, however, so evanescent as to be speedily dissipated on exposure, so that such water must be used immediately when drawn.

Although from a medical standpoint doubt has been cast upon the value of the chemical properties of spa waters, this doubt has been dispelled with a more exact knowledge of biochemistry, which has led to a correct interpretation of their action, and so of their medical use. Up to the middle of the nineteenth century, when medical climatology again came into prominence, spa practice was purely empirical. Now every resort with a claim to therapeutic value should develop its own resources along scientific lines. For, in the words of Fortescue Fox, "Each spa has its own individuality," which should be fostered and guided aright by utility in treatment and by a reasonable limitation of its reputed curative value, so that a wise choice may be made by a physician for the benefit of his patient. A family resemblance among spas as to their medical value should not too lightly be taken for granted, for how often has it not been repeated that we do not treat diseases, but those who suffer from them; and so with spas as places of treatment, the aim of which should be to enhance and profit by the climatic and other advantages of the place.

THE CHARACTERISTICS OF SPA WATERS: BRITISH CLAIMS

[Dr. Watson Smith then outlined the main characteristics of spa waters, dwelling on their biochemical action, their tonic advantages, and—which he termed a feature of cardinal importance—their replenary effects, or the results obtained by the regular replenishment of the circulation by a normal intake of water. He went on to point out that with the urbanisation of the country insufficient rest was a fruitful source of premature collapse, so that sedative sojourns or changes of climate formed a valuable escape from the nervous strains of modern life. He pointed out that while south coast resorts might bring relief to those suffering from essential arterial supertension, insomnia, or debility consequent on nervous stress and strain, the British Isles also abounded, on the east and west coasts, with bracing climates. He continued:—]

With advancing age, when "the years draw nigh, when thou shalt say, I have no pleasure in them," it is wise to take an interest in Nature, whose simple ways thus acquire a charm for us hitherto, maybe, unnoticed, and the lovely villages and backwaters of the countryside "bring the soul nearer to the divine source of all being." The temperature and changeable climate of the British Isles have in the past bred a vigorous, hardy race, able to face life in almost any part of the world. This must be considered one of the chief underlying causes of the formation and successful growth of the British Empire, fostered and encouraged by the great Queen in the nineteenth century. At the present time the fashionable rest cure appears to be the sea-cruise holiday in the sun, offering the completest rest possible for the healthy man, his whole mental outlook changing, as the waves carry him away for many days from shore conditions. For the healthy and vigorous nothing can be better; but for the invalid the discomforts of rough weather and sea-sickness, with the possibility of being "cabin'd, cribb'd, confined" in consequence, render such cruises of very questionable benefit.

Britain, being a most favoured land as to spas and health resorts, it is now generally understood in the profession that there is seldom, if ever, medical necessity to winter abroad, unless it be to obtain by altitude, or by dry or sea air, a suitable climate for the tuberculous or asthmatic. Moreover, the discomforts of travel, change of language and food, absence of home comforts and friends (to say nothing of the less satisfactory sanitary arrangements prevailing on the continent), can be more easily faced, nay, converted into sources of amusement, by the young, high-spirited, and healthy, than by the elderly or invalid. On the other hand, there is no doubt that continental or foreign travel, giving a complete change, may often be beneficial in cases of mental strain and nervous trouble; producing, as it does, a detachment from insular home prejudices, a broadening of outlook by unfamiliar scenes, manners, and customs, and encouraging an interchange of visits and courtesies from country to country.

Directions for Development

Whilst the duty, too often neglected, of increasing the amenities and preserving the beauties of health resorts and spas must primarily belong to public authorities, the scientific, sane, and right guidance of their development should naturally be the part of an educated medical profession. Both locally and generally the whole subject ought to be surveyed, reviewed, and tabulated. Such places are a national asset; the increase of their value to the national health should therefore be the concern of the State and of public bodies to support and encourage. The medical men on the spot, with their experience and local knowledge, must inevitably be the advisers as to type of patient and disease to be benefited and relieved by the resources available at the place in question. . . .

Medicinal springs and baths should be under a public control, ensuring regular chemical analyses, purity, ease of access to the waters, and the circulation of accurate information available alike for rich and poor, for doctor or patient, detailing such accessory matters as climate, environment, endowment of the place with natural beauties, and its mental and bodily advantages: in a word, the individuality of the neighbourhood, *genius loci*. At these health resorts the public is demanding additional methods of treatment, including all manner of baths. Besides providing medicinal, these resorts should offer a wide range of electrical, physical, and other external accessory means and methods for the re-education of body functions and of structures such as joints and muscles. So that an up-to-date

watering-place wishing to prosper will do well not to be deficient in these respects or in available advice as to diet and mode of life best suited to the particular climate or malady.

The average hotel or boarding-house, no doubt, prefers catering for the healthy rather than for the sick. But the comfort and well-being of the latter are essential for the fair reputation or continued prosperity of any place calling itself a *health* resort, and could be fostered and maintained by a varied improvement of facilities for attendance and for the provision of various special diets. An admirable plan would include the provision in hotels catering for invalids of one or more State-registered nurses, responsible to the patient and his medical adviser, and to them only; an invalid annexe would be another device for the attraction and lodging of visitors not fitted for the ordinary daily routine of the healthy. Patients would be ambulatory or convalescent, not confined to bed or in need of any special medical attention.

There is much need for an increase at health resorts in the number of convalescent homes, suited to the means of all sections of the community, not excluding the over-burdened upper and middle classes. Such institutions, municipally or privately owned, administered perhaps under health insurance schemes, might be, so to speak, territorial or regional, used near a patient's home in finer months, or in the south or west in winter. Their cost would amply be repaid by increased efficiency in work of all descriptions, and by gradual elimination of the later stages of such maladies as those of the rheumatic or fibrositic type, which cause so much disablement with loss of time and wages. Our health resorts are in need of necessary, but sympathetic, reorganisation and improvement, much of which could be effected by a healthy rivalry in catering for the requirements of the jaded and sick, and by competition in the provision of the things that matter, among which are those of the mind. . . . Our health resorts should be equipped for mental as well as for corporal benefit. The provision of libraries, art galleries, and museums is as necessary, if not so patently urgent, as that of convalescent homes and baths; a day may come when the healing art will include advice as to suitable studies in art, science, and literature as mental tonics.

The advantages of our health resorts are not infrequently lost to the sick through doubt, indifference, or scepticism as to their real value; by bad and selfish building development; by destruction of natural beauty; by ugly as opposed to reasonable and beautiful forms of advertisement; by too much noise; or by a cost of living which it should be the aim of all sensible governments to reduce. Signs are not wanting, however, of good efforts to lay the foundations of a better state of things by a well-directed campaign of education as to the great advantages of British spas and resorts, not only to ourselves in these islands and to our kinsfolk abroad, but also to our neighbours on the continents of Europe and America.

ST. THOMAS'S HOSPITAL SAMARITAN FUND.—Last year 1505 patients were sent to convalescent homes by this fund at a cost of £3452, towards which they contributed £1116; the Samaritan Fund found £606. Surgical instruments were provided for 2392 patients, at a cost of £2213, towards which the patients contributed £1052. Convalescent homes received 946 patients from the wards and 559 from the out-patient and casualty departments.

GLANDULAR FEVER AND INFECTIOUS MONONUCLEOSIS*

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GLANDULAR fever may be described as an acute infectious disease characterised by fever, enlargement of the lymphatic glands, and changes in the blood, especially lymphocytosis. Pfeiffer gave it the name of *Drüsenfieber*, or glandular fever. Sprunt and Evans, in 1920, used the title "infectious mononucleosis" without recognising the identity of their cases with Pfeiffer's disease.

The discovery of the blood changes has established the existence of glandular fever as an entity, but the outbreaks of the last few years have revealed its extraordinarily protean nature. We shall subsequently divide it into three clinical groups: (1) a glandular type, mainly in children of 5 to 15 years; (2) an anginose type, also known as "monocytic angina"; and (3) a febrile type, mainly in young adults, in which "infective mononucleosis," as described by Sprunt in America, may be included.

Historical

The disease, in the sole form in which it was recognised until the last few years, was first fully described by Emil Pfeiffer in Germany in 1889, under the title of Drüsenfieber. Filatow, a Russian pædiatrist, had given a brief account of it in 1885, but this cannot be compared with Pfeiffer's. The essentials of his description are as follows:—

"A child of 5 to 8 years of age is taken ill suddenly with fever, malaise and some discomfort in the neck. The glands in the neck, especially at the posterior border of the sterno-mastoid, are obviously swollen and painful. The fauces are somewhat reddened, but there is no exudation and the angina is not so extensive as to account for the high fever. The liver and spleen are palpable. Axillary and inguinal glands are never enlarged. The glands never suppurate and the course is always favourable. The fever lasts up to eight or ten days. The condition is infectious and occurs in epidemics."

Pfeiffer thus recognised that glandular fever was infectious and was a general infection although he overlooked the enlargement of the axillary and inguinal glands. He had no knowledge of any blood changes.

The historical vicissitudes of glandular fever are a matter of some interest. For 30 years after Pfeiffer's article was published discussion was confined entirely to the clinical aspects. As soon as it appeared, however, others recognised that they had seen the same syndrome. In the discussion which followed his communication, Heubner mentioned the occurrence of hæmorrhagic nephritis, and the occasional development of urticaria.

That the axillary and inguinal glands were usually enlarged was first noted by Desplats in 1894. In the same year Hörschelmann described a scarlatiniform eruption, and also the occurrence of severe membranous angina. In 1896 Park West published an account of 96 cases seen in the course of three years in a country district in Ohio. This is the first record of cases in America. The first article on glandular fever in Great Britain was written by Dawson Williams and appeared in THE LANCET in 1897. It was a good account of the disease commonly seen in children.

* The Lumleian lectures for 1934, delivered to the Royal College of Physicians of London on March 15th and 20th.

By this time the attacks upon glandular fever as an entity had already begun. Neumann, in 1891, published a series of cases under the title of *Akute Idiopathische Halsdrüsenentzündung*. In half of these there was suppuration, and it is clear that this group had no relation to glandular fever. But it was claimed that they proved that glandular fever is only a local pyogenic cervical adenitis. (In point of fact, suppuration almost never occurs in glandular fever.) It was also suggested that it was secondary to rhinopharyngitis, as by Labbé in 1901. Many authors described it as a complication of influenza, amongst others Gallois in 1901, Delcourt in 1905, and Finkelstein and Fischl in Germany as late as 1924. Others ascribed it to intestinal intoxication (Hochsinger, Trautmann).

In 1908 Pfeiffer read a communication on the disease at the Kongress für innerer Medizin. This is his sole article on the subject apart from the original description in 1889. He added nothing of importance. No one discussed it and no notice was taken of it. Glandular fever had indeed been practically dead for some years previously. From 1906 to 1920 the medical journals of the world contain scarcely a score of articles on glandular fever, and few of these are of any interest. Between 1915 and 1920 I cannot find a record of a single paper with this title, although epidemics must have occurred amongst young soldiers in close quarters. (Burnford is the single observer, as far as I am aware, to whom the possibility occurred. In 1918 he suggested that a group of cases with pyrexia and enlarged glands belonged to Pfeiffer's Drüsenfieber.) Its memory was just kept alive by brief descriptions in general text-books on medicine, though not in works on diseases in children or infectious diseases, or on hæmatology, in which indeed at the present time it sometimes finds no place.

So far glandular fever had depended solely on its clinical features. The *hæmatological period* commenced in 1918 to 1920. During several years previously isolated cases of absolute lymphocytosis with recovery had been occasionally published, the recovery often being thought to be a "cure" of leukæmia due to some method of treatment. These recorded cases are few in number, and I have only been able to trace the following previous to 1918: Curschmann, 1906; Türk, 1907; Cabot, 1913; Marchand, 1913; Jackson and Smith, 1915; Hall, 1915; Ireland, Baetjer, and Ruhrah, 1915; and Eason, 1918.

Curschmann's is apparently the first record of a blood count in a case which may be not unreasonably accepted as glandular fever. It was diagnosed as abnormal mumps. The white cells numbered 50,000 per c.mm., and the lymphocytes 78 per cent.

Türk attracted some attention to his case by the dramatic account of his surprise when he met the patient in the street two weeks after giving a hopeless prognosis. He expressed the opinion that the condition "could not be regarded as more than a sublymphæmic lymphomatosis."

Cabot and Marchand unfortunately believed that the blood changes were due to sepsis, and this possible result of sepsis was accepted for some years, though now disbelieved.

Hall's communication marked an advance. He was the first author to become aware of previous articles, and he recognised that his case was closely similar to those described by Türk, Cabot, and Marchand. He consequently concluded that they were examples of some clinical entity still unknown at that time.

It may be noted that Breinl, Priestley, and Fielding in 1914 published in Australia an account of a local disease under the title Endemic Glandular Fever in the Mossman District, which has many resemblances to Pfeiffer's disease. Somewhat similar cases are described by Haberfeld of Vienna, which were seen by him whilst in Brazil. He attributed the infection to tick bites.

The first series of cases in which an absolute lymphocytosis was present was published by Deussing in 1918, under the title "Ueber diphtherieähnlicher Anginen mit lymphatischer Reaktion" (angina resembling diphtheria with a lymphatic reaction). His 12 cases were from an infectious diseases hospital and were examples of what subsequently became known as "monocytic angina."

He noted the enlarged glands, but accepted them as part of the reaction. His description of the mononuclear cells closely resembles modern descriptions of those in other types of glandular fever. He makes no mention of glandular fever.

He believed that the angina was of ordinary non-diphtheritic type and that the lymphocytosis was the result of a constitutional tendency to "lymphatic reaction" on the part of each individual patient, and did not recognise that he was dealing with the results of a special disease.

A similar paper was published in 1920 by Jagic and Schiffner on the lymphatic reaction in aphthous stomatitis.

In November, 1920, Sprunt and Evans, in America, published the first article in which the existence of an infectious lymphocytosis was clearly stated. They noted throat symptoms, the general glandular enlargement, the palpable spleen, and the invariably favourable prognosis. Their description of the types of cells fairly represents the appearances. They named the condition "infectious mononucleosis." This was an original nomenclature, which had never previously been used. They made no reference to Pfeiffer's glandular fever; indeed, for some time subsequently the identity of the two types was denied in America.

In March, 1921, Bloedorn and Houghton, also in America, published four similar cases under the title "acute benign lymphoblastosis." They did not recognise its infectious nature.

In March, 1921, Morley and I recorded the first case diagnosed as glandular fever in which the presence of a lymphocytosis was recognised. The patient was a boy aged 8 years, who had a typical attack of glandular fever. The blood showed a leucocyte count of 15,000 per c.mm., with 75 per cent. of lymphocytes. On reading Sprunt and Evans's article we were satisfied that the two groups were of the same origin.

Morse, in October, 1921, published two adult cases resembling Sprunt and Evans's, under the title of "glandular fever," and considered that the two conditions were identical. Longcope, in 1922, published 10 cases as "infectious mononucleosis (glandular fever)," and in 1923 Downey and McKinlay recorded 9 under the designation "acute lymphadenosis." Both papers contain good descriptions of the types of cells present. Indeed, Downey's is the classical and best study extant.

By 1925 the identity of the two conditions was accepted in Britain and America, but on the continent the existence of the entity was doubted for many years. During most of the decade 1920 to 1930, German and Austrian authorities were actively engaged in discussing the occurrence of "monocytic angina" and the "lymphatic reaction" without realising that these were cases of glandular fever. In England and America this discussion on monocytic angina has never aroused much interest and the condition has been accepted almost tacitly as a form of glandular fever. There is no appreciable literature on the subject in the English language.

The foreign authorities went astray from the start. They became obsessed with the idea that the development of the lymphocytosis was the result of a constitutional lymphatic tendency in the individual which was called into activity by the angina. They held that the angina was the initial morbid factor and that it did not differ from the angina which would provoke polynucleosis in other individuals. They did not recognise that they were dealing with an infectious disease of which both the angina and the lymphocytosis were a part.

Deussing's article has already been mentioned, but Schultz's communication on Monozytenangina in 1922, to the Congress for Internal Medicine, first attracted general attention to the subject. It was based on five cases (published by Baader) which were similar to Deussing's and were admitted as diphtheria to an infectious diseases hospital. Baader noted the unusually long duration of the angina and of the fever, also the generalised glandular enlargement and the palpable spleen. The membranous angina cannot be distinguished from diphtheria by its appearance. Schultz held that the cells were monocytes and not lymphocytes and that the blood changes were due to a constitutional lymphatic reaction. Though Schultz's views were widely accepted, lengthy discussions as to the nature of the cells took place (Baar, Hopmann, Preuss).

Criticisms of Schultz's views began to appear in German literature, first on the ground that the cells were lymphocytes, secondly because similar blood changes were reported in cases with much slighter faucial symptoms, and thirdly on the ground that the blood changes were symptoms of a "morbus" and not a constitutional abnormal reaction (Brogsitter, Kwasniewski and Henning, Schmidheiny). In 1927 Schultz with Mirisch agreed haltingly that the cells were lymphocytes, but refused to accept the identity of cases with and without angina in spite of the identity of the hæmatological changes and of the enlargement of the glands and spleen. They upheld the constitutional lymphatic reaction in their type.

The differentiation of monocytic angina from glandular fever and the theory of a constitutional lymphatic reaction thus continued and articles on the same lines followed up to 1929 from Hartwich, Lenhartz, Hrabowski, and Feer, and indeed are still appearing. As Nyfeldt says, "monocytic angina nearly pushed out glandular fever."

The argument that monocytic angina is glandular fever was put forward on the continent by Glanzmann in his monograph on Glandular Fever in 1930, by Nyfeldt in 1932, and by Lehndorff and Schwarz in various articles and in their monograph in 1932. The evidence for the identity of monocytic angina and glandular fever is as follows :—

(1) In epidemics of glandular fever, cases occur with and without angina of all grades, and between the two groups no difference can be found in the blood changes, the glandular swelling, and the enlargement of the spleen.

(2) The cases with membranous angina cannot be distinguished from monocytic angina.

(3) Similar changes in the mononuclear cell are found only in glandular fever and monocytic angina (except possibly in rubella), so far as is at present known.

(4) Monocytic angina differs from other forms of angina in (*a*) the long prodromal period ; (*b*) the long duration of the angina and fever ; (*c*) the general glandular enlargement ; (*d*) the frequency of recrudescences.

It may now be accepted that monocytic angina is a type of glandular fever. It will be described clinically as the anginose type.

FEBRILE TYPE: THE ENGLISH EPIDEMIC OF 1930

During the years 1920–24 glandular fever must have been prevalent throughout this country. Epidemics occurred in many schools. Between 1925 and 1928 it was rare.

In 1930 there was an extensive epidemic in England, which differed widely from those previously recognised. It was characterised by especially attacking adults, by the prolonged and often severe pyrexia, by the occurrence of an eruption often indistinguishable from typhoid, and by the late onset of the glandular enlargement, often mild in degree, and of the lymphocytosis. At the beginning of May attention was drawn to the epidemic (Tidy); further evidence then quickly appeared from Krestin, Cantor, Evans and Robb, Balme, Loewy, and Hall. Cantor suggested that glandular fever of this type had three stages : (1) stage of onset, with pyrexia and malaise ; (2) stage of eruption, from the fourth to the seventh or tenth day ; and (3) stage of glandular enlargement, from the tenth day onwards. There is no doubt that this is correct, and expresses briefly the characters of this febrile type of glandular fever.

Parkes Weber and Rolleston especially called attention to the transient positive Wassermann reaction. The presence of an absolute lymphocytosis was noted by all observers. It develops in the third stage with the glandular enlargement.

By the autumn of 1930 the general clinical features of the outbreak were fairly clear. It was extensive over the south of England and extended to the north, but its unusual characters led to frequent errors of diagnosis, especially of influenza, typhoid, and other exanthemata. In October, 1931, a discussion of glandular fever was held at the Royal Society of Medicine, which was practically devoted to this epidemic. Series of cases were reported from Reading by Mills, and from Birmingham by Williams, as well as from London. There is little other literature on this outbreak or this type.

There can be no doubt that this is a type of glandular fever. Its course appears to represent the full development of glandular fever with a prodromal period, a stage of eruption, and a stage of glandular enlargement. Other types and varieties arise from certain phases of the full course being exaggerated and others being absent. It was practically confined to adults in 1930, but cases at younger ages are now known. There are only scanty records of previous epidemics of this type. Botschkowsky in 1900 in Russia, and Spencer in 1926 in America, appear to have seen epidemics. A single instance occurs among Longcope's cases published in 1922. Steinfield and Goldberg recorded a case in 1926. It is difficult to find other satisfactory examples.

One may wonder in what guise glandular fever will next make its appearance.

Ætiology

Distribution. — The disease has been recorded throughout Europe except in the extreme south, in North America, China, Australia, and the Falkland Islands. No case is reported from South Africa. With regard to the tropics, the only records are an epidemic in Trinidad described by Cochrane, and two cases in Manila described by Hasselmann. There is no satisfactory case from India.

Age-incidence.—Probably no age is immune to any type. It has been recorded at 4 months by Glanzmann, and at 70 years by Moir, but it is rare over 40 years. The glandular type is commonest between the ages of 6 and 15 years. In adults it tends to be very mild. The febrile type is most common and typical between the ages of 15 and 25 or 30 years. Infectious mononucleosis is a mild "febrile type," and occurs mainly at the same ages. The anginose type is most common between 10 and 25 years ; it also occurs in young children, but is rarely of the same severity.

The incubation period appears to lie usually between

5 and 15 days. I have seen fairly definite examples at 5 and at 12 days.

The degree of infectivity is not high. Single cases will often occur in a family and no other child become infected. On the other hand, susceptibility appears to be almost universal. When two or three cases develop in a school and there is an opportunity for mass infection, it frequently happens that all the other children become infected. Droplet infection may be the mode of transmission. It is probable that the disease is infectious only in its early stages. Thus it is clear that the anginose type is practically non-contagious, the infectivity having already passed.

The duration of infectivity cannot be estimated from evidence at present available. As a working rule I would suggest isolation for one week after the temperature has become normal and the main mass of the glands has subsided, and in the absence of any faucial inflammation.

The duration of the infection in the subject is a different question. Recrudescences and recurrences are proof that it may linger for many weeks or months. There is no evidence as to its infectivity in such recurrences.

Sporadic cases have been thought to differ from epidemic cases in their greater severity, more marked blood changes, and lower degree of infectivity. On careful consideration I agree with Glanzmann that there is no difference between sporadic and epidemic cases.

Clinical Manifestations

When Pfeiffer first described glandular fever it appeared to be a simple entity, but it is now known that its manifestations are protean. Lehndorff and Schwarz describe two groups: (*a*) Pfeiffer's type, glandular enlargement prominent; and (*b*) anginose type, faucial changes prominent. They were unacquainted with the prolonged febrile type.

The essential features of glandular fever may be stated as: (1) fever, (2) glandular enlargement, (3) faucial affections, and (4) changes in the blood—i.e., lymphocytosis. The predominance of one feature separates different groups, but no "blood" group is recognised, and glandular fever can be considered in three main groups: (1) glandular or Pfeiffer's type, (2) anginose type (monocytic angina), (3) febrile type. It must be borne in mind that these are groups of the same disease, and consequently all intermediate forms occur.

GLANDULAR OR PFEIFFER'S TYPE

Age and sex.—The majority of cases occur between the ages of 6 and 15 years, but no age is immune.

Prodromal period.—There is commonly a prodromal period before the glandular enlargement of one to four days, usually one or two. It is rarely as long as six days, but possibly may even exceed this. It may appear to be completely absent.

The onset is usually fairly acute. Headache is often complained of and there are the usual features of malaise.

Faucial symptoms.—There is usually complaint of sore-throat at the onset, but on examination there is little to be seen. There may be some general reddening of the fauces, and one or both tonsils may be prominent and red, but without exudation. Occasionally there is some follicular tonsillitis. Pfeiffer's observation that the degree of glandular enlargement was out of proportion to the faucial changes still holds good in this type.

Fever.—The temperature is moderately raised during the prodromal period; it may reach 101° or even 103°. There is practically always pyrexia when the glands enlarge, the degree roughly corresponding to the acuteness of the onset and the size of the glands. The temperature generally falls rapidly as the glands diminish in size after three or four days, and usually reaches normal in the second week. With recurrence of glandular swelling the temperature tends to rise again.

Constitutional symptoms are slight. The patient does not appear to be seriously ill, and there is no anæmia. There is no eruption. The pulse and respiration are not unduly rapid for the temperature. Vomiting occasionally occurs and the bowels are apt to be constipated. Abdominal pain is not infrequent, but usually not at the onset. There may be a slight cough. Epistaxis is not uncommon and may be severe.

Enlargement of lymphatic glands is the predominating feature. All or any group of glands may be enlarged, but the cervical glands are pre-eminently affected. It is rare for other groups to be enlarged in their absence or to the same extent.

Cervical glands.—The enlargement of the cervical glands is commonly recognised within the first three days. The increase in size often takes place with great rapidity and a visible mass may develop in a few hours. The glands may, however, take two or three days to reach their maximum. A definite mass is usually unilateral; on the opposite side some smaller glands are palpable, and subsequently these may enlarge further. It is frequently stated that the left side is far more commonly affected than the right, but in my own experience I am unable to find any marked difference. The glands most characteristically enlarged are deep to the sternomastoid, about the middle of its length and somewhat below the level of the angle of the jaw. They are discrete and movable, and have a firm elastic consistency on palpation.

Any of the glands in the neck may be affected. Œdema of the skin and tissues is very rare. The pre-auricular, submaxillary, and submental lymphatic glands also are occasionally enlarged. The occipital glands are seldom palpable in this type. The degree of pain and tenderness is variable, but it is rare, though not unknown, for it to be severe. In younger children it may be completely absent. Torticollis has been observed several times, but only lasts a few days. Spasm of the muscles at the back of the neck may also occur and cause suspicion of meningitis.

Axillary glands.—These become palpable probably in 80 per cent. of cases, but nearly always after the cervical glands. They rarely exceed the size of hazel-nuts. A definite mass occasionally develops.

Inguinal glands.—These are less often enlarged than the axillary. There may be a chain of considerable size and extent. The epitrochlear glands are not infrequently palpable.

Parotid and salivary glands.—It is disputed whether or not the parotid and other salivary glands are ever involved. This is a question of some interest as glandular fever has been frequently diagnosed as "aberrant mumps." Very few instances are recorded (Hörschelmann in 1894, Haas in 1912), but Glanzmann states that he is certain that he saw six cases in the large outbreak in Berne. Personally I have never seen a case in which the parotid became affected. I have been in doubt several times between the diagnosis of glandular fever, mumps, and sepsis. The after records show that in such cases the condition is almost always sepsis.

Thoracic and mediastinal glands.—Pfeiffer in his original article noted the occurrence of cough which he attributed to pressure of retrotracheal glands, and von Starck in 1890 observed that the cough in glandular fever may have a convulsive character suggestive of whooping-cough. Several cases have been published giving evidence of pressure on the bronchi (Glanzmann, Tidy). This has been confirmed radiographically by Buttenwieser, Longcope, and Nelken.

Mesenteric glands.—The development of palpable masses with abdominal disturbances is often recorded, as by Park West. I have several times felt definite

abdominal masses which have subsequently disappeared, but I doubt if they are common.

Spleen and liver.—The spleen is frequently palpable. It is difficult to say how often; in half the cases at least. The enlargement is rarely more than one or two fingers-breadth below the costal margin and it is not tender. Its presence and its size bear no relation to the severity of the attack. There is no rule as to when it appears in the course of the glandular type, but it is usually later than the glands. It may persist for long periods, even months or years after the attack has passed. The liver may also enlarge, as Pfeiffer noted, but this is rarely a marked feature and is not often tender.

Course.—The definite mass of glands rarely remains more than two or three days and then subsides rapidly. The temperature falls with the glands and the fall may be so rapid as to suggest a crisis. The general symptoms subside at the same time. This is often the termination of the acute attack and convalescence sets in. The glands, however, though much smaller, are often palpable for a considerable period, and have been known to persist for more than a year. Suppuration of the glands and septic complications are no part of the ordinary course of glandular fever and are extremely rare.

Recrudescences are very common. If the main mass has been confined to one side, the other side may subsequently enlarge. This may be while the initial mass is still present or after it has diminished. The pyrexia and symptoms return, and the course is similar to the original attack.

Recurrences may take place after considerable periods of freedom and are not uncommon after several weeks. There may be several recurrences over a period of three or four months, the severity gradually decreasing. In rare cases they have extended over several years.

Convalescence.—Immediate convalescence is rapid, except in cases with recurrence. There is, however, a definite tendency for a long period of slight but appreciable debility to follow an attack. Some degree of anæmia may develop. This may last for 6 to 12 months, but leaves no permanent results or ill-effects.

Prognosis.—The final prognosis is uniformly good in the absence of rare complications, and there are no permanent ill-effects.

ANGINOSE TYPE

(Monocytic Angina)

The type which will be described here principally refers to cases in which a membrane is present on or near the tonsils clinically indistinguishable in its appearance from diphtheria. Diphtheria bacilli are absent. Various cocci are present, and Plaut-Vincent organisms are often found. This type is rarer than the glandular form, and it is not infectious at this stage. It is commonest between 10 and 25 years of age, and under 10 years it is rarely severe. It must be noted that lesser grades of faucial change may be associated with a similar course.

There is a prodromal period of considerable length, from one to three weeks, during which there is increasing malaise and pyrexia, without any definite physical signs. Complaints of the throat begin to be made, at first slightly and then more seriously. On examination the membrane may already be formed. The temperature often reaches 104°. More rarely the angina may develop in the course of a glandular type, but it does not occur as an initial symptom. The tonsils, if seen before the development of the membrane, are red and swollen. The membrane when formed has the colour and distribution of that of diphtheria, is indistinguishable from it, and it may be unilateral or bilateral. The uvula is frequently œdematous and the membrane may extend over it. The breath may be odourless or with varying degrees of fœtor.

Peritonsillar œdema is common, but a tonsillar abscess is rare. Even when this occurs, suppuration of the lymphatic glands seldom follows, though many of the recorded cases of suppuration in glandular fever have been in this type.

Membrane never forms in the nose and never in the larynx. There may be severe discomfort from œdema of the tissues, but laryngeal obstruction is unknown.

The cervical lymphatic glands are always enlarged by the time the membrane is present, but they do not form such large masses as in the glandular type. Œdema of the neck and considerable tenderness is common at the height of the faucial changes and palpation of the cervical glands may be difficult. Some axillary glands are palpable in most cases. The spleen may be palpable, but perhaps less often than in the glandular type.

There is considerable discomfort and mental anxiety when the faucial changes are at a maximum, especially with œdema of the neck, but the constitutional disturbances are not in proportion to these features or to the temperature, and the patient usually looks fairly well. The heart does not suffer, either temporarily or subsequently. Eruptions are practically unknown.

General course.—The membrane may persist for many days, unlike that of diphtheria. As it separates the fever tends to fall, the fauces become more comfortable, and convalescence is often rapid. In some cases, however, pyrexia, about 100°, may persist for several weeks. This is sometimes due to recurrences which are not infrequent, but rarely attain the severity of the original attack. The special complications which occur in diphtheria are unknown. Diphtheritic antiserum has no effect. A few fatalities have resulted from broncho-pneumonia and general sepsis, but apart from these, recovery has been complete and there are no permanent ill-effects.

FEBRILE TYPE

There is a fairly characteristic course for this type in adults, although many variations occur. In children the course and sequence of the manifestations are less constant and rarely so severe. Three stages may be recognised:—

Stage of invasion.—The onset is usually sudden with headache, malaise, and a temperature of 102° to 103°. There may be one or two rigors. Less often the onset is insidious and vague. Sore-throat is rarely complained of in adults, though the fauces may be reddened. Headache is frontal and often occipital and may be so severe as to suggest meningitis. The face is flushed and the skin moist. Photophobia and conjunctivitis are common. There is no enlargement of glands or spleen at this stage. Gastro-intestinal symptoms are absent. There is no regular course for the temperature. The pulse is not specially rapid and when the temperature is high the rate may be disproportionately slow.

The stage lasts until the appearance of the eruption, and thus has a duration commonly of three to seven days, but it may be as long as ten days.

Stage of eruption.—The rash appears usually between the fourth and seventh days, most commonly on the fourth or fifth. It may be delayed as long as the tenth day. The most common type consists of macules or papules, and may be described as a maculo-

papular eruption, or, as some observers prefer, a roseolar eruption. The spots are commonly 2 to 5 mm. in diameter, pink or pinkish-brown in colour, and may disappear on pressure. In number they are generally scanty, about eight to ten spots, but they may be fairly numerous. They are distributed principally on the front of the trunk, but may also be scattered over the back and limbs, and a few spots rarely may appear on the face. They are not irritable. A crop fades in about four days. There is usually only one crop, but further crops may develop or may appear in a relapse. The eruption thus presents a close resemblance to typhoid. Sometimes the spots are more raised and rather larger than typhoid, but in others it is difficult to find any point of differentiation.

An eruption does not always develop. It is difficult to estimate its frequency. It was present in nearly every adult case which I saw in 1930, but if scanty it is easily overlooked.

The constitutional symptoms become more marked during this stage. The temperature rises to 102° to 104° at the onset of the eruption. It is usually sustained during the presence of the rash, then becomes remittent and tends to fall gradually. The pulse-rate may remain at about 100. Sweating is often profuse, and rigors may occur. Epistaxis is not uncommon. Gastro-intestinal symptoms are usually slight or absent, though there may be constipation with some abdominal distension. Vomiting is rare. Occasionally there is complaint of abdominal pain towards the end of the stage. The spleen is not usually palpable. The Wassermann reaction occasionally becomes positive during this period.

The duration of this stage, until the glandular enlargement appears, is commonly 10 to 14 days, but may be three weeks. Towards the end there may be considerable exhaustion. The diagnosis of typhoid fever is frequently made, in spite of the negative agglutination and bacteriological tests.

Stage of glandular enlargement.—The lymphatic glands commonly become palpable about the end of the third week, between the eighteenth and twenty-fifth days. There is considerable variation, and the limits may be stated as the tenth to the thirtieth days. The groups which enlarge are the same as in the glandular type, but they rarely attain to the same size. They may be slightly tender, but are often discovered on routine examination due to the rise of temperature. They may continue to increase in size for several days. The spleen often becomes palpable during this period, but rarely is more than one or two fingers-breadth below the costal margin. Faucial symptoms are uncommon.

The temperature generally rises again with the development of the glands, and may reach 102° or even 104°. It is usually remittent for about two weeks and then becomes intermittent and gradually falls to normal in the course of a further two or more weeks. The constitutional symptoms usually ameliorate during this stage, though there is often considerable exhaustion. The Wassermann reaction is positive in this stage in a considerable proportion of cases, but it becomes negative before the temperature reaches normal.

The duration of this stage may be prolonged. It lasts until the temperature is normal and the main swelling of the glands has subsided. The duration of the temperature is usually about four weeks, but may be many weeks or even months. Convalescence then gradually sets in.

Relapses and recurrences are not uncommon. An eruption may appear for the first time and a short course of rash and glandular enlargement may be passed through. In other cases there are recurrent rises of temperature which may prolong the course over many months. With these rises the glands may or may not enlarge, but in general the longest pyrexias are associated with comparatively slight enlargement of the superficial glands.

Variations in Clinical Types

Infectious mononucleosis.—The type of glandular fever described in America as infectious mononucleosis especially occurs among young adults—e.g., students and nurses. The general course resembles the febrile type of a mild degree.

Infants and young children.—Glandular fever is rarer at such ages than in older children and younger adults, and is not usually severe, although all three types occur. The course is often less typical, and may exhibit features of all types in a short period. Rashes are variable, and the rubelliform type is commoner than the maculo-papular. The rash may occur at any stage, either before, after, or with the glandular enlargement. The blood may exhibit rapid and marked changes, and counts above 40,000 leucocytes are confined to infants and young children.

Visceral forms.—The visceral glands may enlarge in glandular fever. The enlargement of thoracic and abdominal glands has already been referred to.

More obscure are cases with abdominal pain and absolute lymphocytosis, and no palpable glands, peripheral or otherwise. The cases recorded vary widely in their clinical course. Many have been characterised by prolonged pyrexia, severe constitutional symptoms, and enlarged spleen and liver, the duration being up to many months. But milder courses are met with. Appendicitis may be simulated. Finally, there are cases with no more manifestation than a transient lymphocytosis discovered by chance. There is no conclusive evidence for the diagnosis of glandular fever in many of these since there may be other factors at present unknown. Many cases have been published, all of which have recovered (Glanzmann, Mills, Schmidheiny, Tidy, Parkes Weber, Wilson, and Cunningham).

Eruptions

There is no characteristic eruption constant for all types. In the glandular and anginose types eruptions are rare—especially among children between 6 and 15 years of age. Urticaria occasionally develops. Amongst younger children and infants eruptions are more frequent and variable, and may be urticarial, erythematous, or rubelliform.

Character of eruptions.—There are two important types: (1) a macular eruption in the febrile type, and (2) a rubelliform eruption, mainly in young children. In the febrile type, in the English 1930 epidemic, the rash was a prominent feature and present in the majority of cases. It was usually referred to as a maculo-papular or roseolar eruption, and closely resembles enteric. It has been described fully in the section on the febrile type. It is rare in childhood. In the ordinary course it fades before the glands become palpable; this is almost invariably so in adults. The rubelliform eruption occurs mainly among young children. It may appear at the onset, before or with the glandular enlargement, or later in the attack. Glanzmann is convinced that in many cases it is indistinguishable from rubella, and also that the occipital glands are frequently enlarged. As in rubella, the eruption may be confluent in parts and discrete in others. Other authorities describe it as scarlatiniform.

Eruptions may develop which have been variously

described as urticaria, erythema nodosum, or morbilliform. These are usually transient. Rolleston saw a case diagnosed as typhus. Goldman observed absolute lymphocytosis in a case diagnosed as chicken-pox. Herpes labialis has been recorded many times. I have never seen it in the ordinary glandular type.

Complications

Sepsis.—Suppuration of the glands is no part of glandular fever. Secondary infections must naturally sometimes occur, but are very rare. In infants retropharyngeal abscess may develop ending in suppuration of the glands. Glanzmann had only one case of suppuration amongst many hundreds of cases in infants and children. Personally I have never seen the glands suppurate.

The rarity of suppuration is especially striking in the anginose type; although suppuration often appears imminent, it rarely develops. Nevertheless many of the recorded cases have been in this type. In the febrile type there is no record of the occurrence of suppuration. The rarity of sepsis applies also to such complications as otitis media, mastoiditis, and antritis. When they occur the course is usually benign.

Epistaxis is not uncommon. It may occur at any time in the course. It may be so severe as to cause anæmia. In the febrile form it may be severe before the glands enlarge.

Hæmaturia was mentioned by Heubner in speaking on Pfeiffer's original communication. In 1921 Morley and I collected the statistics of 270 cases of glandular fever, which gave an incidence of 6 per cent. for hæmaturia. It may be the first symptom for which a doctor is consulted. It is uncertain whether it should be regarded as "acute hæmorrhagic nephritis," or as a simple bleeding. In any case it appears to be a harmless manifestation. I have watched several cases over a course of years and I have never known nephritis to develop. Hæmaturia may occur in any type, and is not commoner in the anginose type or with severe sore-throats. Large epidemics have been recorded without any example.

Purpura and skin hæmorrhages are extremely rare. Altogether I can only find five recorded cases (Downey and McKinlay, Königsberger, Lewin, Minot, and Williams). These were severe but complete recovery occurred in all. In Minot's case the thrombocytes were reduced, but there is no record in the others. Other hæmorrhages are very rare, but I have once seen rectal hæmorrhage with bright blood in a child.

Conjunctivitis is by no means uncommon. I have seen it several times in the glandular type. In the febrile type it is more common. It appears as a dry catarrhal conjunctivitis.

Jaundice is rare, and all recorded cases have been in adults, except one child aged ten years (Glanzmann). It commonly develops after the glandular enlargement, but may precede it in the febrile type. These cases may be otherwise normal. The jaundice may be due to pressure of glands in the hilum or to hepatitis. Chevallier and Schmidheiny, during epidemics, saw cases with jaundice and lymphocytosis, but without any swelling of peripheral glands.

Meningeal symptoms.—Pain and spasm of the neck muscles and headache may be sufficiently severe to suggest meningitis. A case of Epstein and Dameshek's is evidence that the meninges may be involved. The cerebral symptoms were marked, and there was a typical lymphocytosis. On lumbar puncture the fluid was under high pressure, and contained numerous lymphocytes. A similar case has been published by Johansen. Both cases recovered.

Wassermann reaction.—In the 1930 epidemic the reaction was found to be positive in about half the cases tested. It usually became positive in the second week and persisted for some weeks, and then became negative. It was rarely very strongly positive. Sprunt suggests that this transient reaction is connected with the presence of heterophile antibodies.

Respiratory organs.—A slight cough is not uncommon, and may be attributed to the condition of the fauces. Bronchitis and broncho-pneumonia or pneumonia have been recorded many times. Recovery is usual but fatal terminations have occurred, and this must be regarded as a serious complication.

(To be concluded)

A NEW ANTIGEN OF B. TYPHOSUS

ITS RELATION TO VIRULENCE AND TO ACTIVE AND PASSIVE IMMUNISATION

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THE newer knowledge of antigenic structure and antigenic variation of bacteria, accumulated during the last fifteen years, has altered very considerably the older conception of the mechanisms concerned in specific antibacterial immunity. It is now generally recognised that separate and distinct antigenic components of the bacterial cell play quite different rôles in immunity and immunity reactions.

In the case of the flagellated bacilli the important factors are the O antigens and the corresponding antibodies, while the flagellar H antigens and the antibodies that react with them are of no protective value in active and passive immunisation. Smooth-rough variation, which does not affect the flagella but is associated with partial or complete deterioration of the specific smooth O antigen, concurrently reduces and eventually annuls the immunogenic value of bacteria undergoing this type of variation. The smooth O antigen, or more particularly the so-called type-specific polysaccharide, which is its most important constituent, is also held responsible for the high virulence of smooth bacteria as contrasted with the low virulence of rough variants (for references see Topley[1]).

In a recent paper (Felix and Pitt[2]) we have shown that in the special case of *B. typhosus* virulence is intimately associated with resistance to the action of the O antibody. Inagglutinable strains are highly virulent, whereas agglutinable strains are of low virulence. Both types of strain showed the general characters of smoothness and did not differ in their content of smooth O antigen. The conclusion therefore appeared inevitable that in the case of *B. typhosus* the mere presence of smooth O antigen does not of itself determine high virulence, and that some unknown factor is required to render this antigen resistant to the action of the O antibody.

The nature of this factor at first appeared entirely obscure. Further experiments, however, revealed the surprising fact that it is itself an antigen, separate and distinct from the long-established O and H antigens of *B. typhosus*. The subject of the present paper is

the demonstration of the existence of this antigen and of its immunological significance.

Four strains, representing the two extreme types described in the previous paper (Felix and Pitt[2]), were selected for the preparation of vaccines and were used for the immunisation of mice, since Grinnell[3] and Perry, Findlay, and Bensted[4] had shown that the mouse is a very suitable experimental animal for virulence and protection tests with *B. typhosus*. The vaccines were saline suspensions of 24 hour agar cultures, standardised by opacity and killed by heating for 1½ hours at 58° C. Mice weighing between 26 and 28 g. were inoculated subcutaneously at three days' interval, the first dose containing 200×10^6, the second 400×10^6 organisms. Twenty-four days later the test dose was inoculated, intraperitoneally, consisting of 2 M.L.D. ($= 200 \times 10^6$ organisms) of our most virulent inagglutinable strain Ty 2. The technical details observed in this and the subsequent infection experiments have been described in the previous paper.[2]

It is seen (Table I.) that the two vaccines prepared from inagglutinable and highly virulent strains

TABLE I.—*Active Immunisation*

Vaccines used for the immunisation of mice.		Number of mice tested by intraperitoneal inoculation of strain Ty 2 (200×10^6 organisms).	
Strain.	Type.	Tested.	Survived.
Ty 2 } Giglioli. }	Inagglutinable smooth. Virulence high.	20 19	15 17
Ty 8 } Rawlings. }	Agglutinable smooth. Virulence low.	22 20	1 1
Controls with normal mice—			
Full test-dose (200×10^6 organisms)		20	0
Half test-dose (100×10^6 organisms)		16	0

conferred a very high degree of protection, whereas those made from the two agglutinable strains of low virulence were devoid of protective action. The clear-cut result of this experiment permitted one interpretation only—i.e., that the factor responsible for inagglutinability and virulence is an antigen and that the corresponding antibody is a powerful protecting agent. Attempts were therefore made to demonstrate this antibody by in-vitro tests.

Demonstration of the Virulence Antigen (Vi)

Previous experiments with inagglutinable and agglutinable smooth strains had failed to reveal any antigenic difference between the two types. Suspensions of the inagglutinable or resistant strains, when used in the living state in agglutination and absorption tests, were unable to react with the O antibody. However, when killed by heat or by treatment with various chemicals these suspensions were agglutinated by O immune serum to titre limit and quantitative absorption tests with standardised suspensions showed that sensitive and non-sensitive strains did not differ in their content of the smooth O antigen. Furthermore, in rabbit immune sera prepared by inoculation of inagglutinable strains, killed by heating at 60° C., no residual agglutinin for the homologous strain was demonstrable when the O agglutinin had been removed by absorption with an agglutinable strain. These results seemed to justify the statement made in the previous paper[2] that the two types of strain did not differ in their antigenic composition.

Although the protection experiment recorded in Table I. clearly indicated the presence in the inagglutinable strains of a separate antigen which withstood heating to 58° C., it was thought possible that this treatment might impair its agglutinogenic value and thus preclude the demonstration of the corresponding antibody by agglutination methods. Rabbits were therefore immunised with suspensions of living organisms of the two types of *B. typhosus* and control rabbits were inoculated with suspensions heated at various temperatures. The strain "Mrs. S." which had been used in earlier experiments by Ledingham[5] and Arkwright[6] was also included in the series; this strain is of the type of intermediate agglutinability and virulence and represents the most common type of *B. typhosus*.

Four intravenous inoculations were given at intervals of two days. The suspensions of living organisms and those killed by heating at 58° C. were each time freshly prepared from 24 hour agar cultures, while those heated at 70° C. and 100° C. were prepared in bulk and stored in the cold. The total number of organisms inoculated is stated in the Table. One week after the last inoculation blood was drawn from the jugular and tested against fresh saline suspensions of living organisms of the inagglutinable and agglutinable types. The technique of the agglutination tests was the same as described in the previous paper.[2]

It is seen from Table II. that the immunisation with living organisms of the three inagglutinable

TABLE II.—*Agglutination Test*

Rabbits immunised with strains of *B. typhosus*.				Titres of the antibodies present in the sera.		
Rabbit.	Type of strain.	Strain.	Dose in million of organisms.	H	O	Vi
62	Inaggl. Virulence high.	Ty 2—Live	800	10,000	5,000	400
63		Heated 1½ hrs. at 58°	8000	20,000	20,000	0
64		" 1 hr. " 70°	8000	1,000	50,000	0
65		" 1 " " 100°	8000	200	20,000	0
67		Giglioli—Live	800	5,000	5,000	100
68		Heated 1½ hrs. at 58°	8000	10,000	20,000	0
69		" 1 hr. " 70°	8000	2,000	20,000	0
70		" 1 " " 100°	8000	0	20,000	0
74		Watson. Live	800	5,000	2,000	200
75	Intermediate. Aggl. Virulence low.	"Mrs. S." Live	800	20,000	10,000	50
71		Ty 8. Live	1600	20,000	5,000	0
72		Ty 901. Live	1600	20,000	10,000	0
73		Rawlings. Live	1600	5,000	20,000	0

Titre 0 = a negative result in a dilution of 1 in 20.
Aggl. = agglutinable.

strains and of the intermediate strain "Mrs. S." led to the production of an antibody which was absent from the sera of the rabbits inoculated with living agglutinable organisms and also from those immunised with heated suspensions of the two most virulent and inagglutinable strains Ty 2 and Giglioli. The symbol "Vi" is used for this antibody, since it is proposed to designate the new antigen as the "Virulence antigen" and to refer to it as the "Vi" antigen.

The Vi antibody is capable of clumping the inagglutinable strains, whereas the O antibody is unable to produce this effect. The macroscopic appearance of the Vi agglutination is very similar to that of O agglutination; small granules of uniform size are formed, which settle slowly and leave the supernatant fluid perfectly clear. The titre of this

antibody is very much lower than those of O and H antibodies, the highest Vi titre observed in the present series not exceeding a dilution 1 in 400.

All the virulent strains reacted with all the sera containing the Vi antibody, thus indicating uniformity of the antigen concerned. The intensity of the reaction showed a definite relationship to the degree of virulence. The Watson strain was most readily clumped by the Vi antibody, next followed the strain Giglioli, and then Ty 2. This is the inverse order of their relative virulence.[2] The Vi titres recorded in Table II. represent those observed with the strain Watson as test strain.

The independence of the Vi antibody of the accompanying O and H agglutinins was readily demonstrated by absorption tests. Table III. illustrates in much abridged form the results obtained in numerous experiments.

TABLE III.—*Agglutinin Absorption Test*

Type of antibody.	Titre of agglutination. Rabbit serum 62 II. (versus strain Ty 2, live). 1·5 c.cm. of dilution 1 in 20 absorbed with suspensions of living organisms of strains.						Control serum unabsorbed.
	Giglioli. 40,000 mill.	Watson 40,000 mill.	Mrs. S. 80,000 mill.	Ty 1. 160,000 mill.	Ty 901. 240,000 mill.	Rawlings. 240,000 mill.	
H	1000	500	1000	0	0	0	10,000
O	2000	2000	1000	500	0	0	5,000
Vi	0	0	0	0	400	400	400
Type of strain	Inagglutinable.		Intermediate.		Agglutinable.		

Titre 0 = a negative result in a dilution of 1 in 100.

It will be observed that the titre of the Vi antibody remained entirely unaltered after the O and H agglutinins had been removed from the serum by absorption with living organisms of the highly agglutinable type of *B. typhosus*. These strains were unable to reduce the Vi titre although the serum was treated with enormous numbers of organisms. On the other hand all the inagglutinable and intermediate strains tested removed the Vi antibody readily, irrespective of whether the O and H agglutinins were simultaneously removed or reduced.

In certain experiments especially designed to decide whether there was any summation effect in the agglutinating action of the Vi and O antibodies it was found definitely that neither of them was capable of enhancing the action of the other.

It is at present a matter for speculation what exactly the mechanism is by means of which the Vi antigen renders the smooth O antigen in the living organisms resistant to the action of the O antibody. The supporters of the surface theory of antigen-antibody action undoubtedly will welcome the phenomenon as additional evidence of the correctness and general validity of the theory.

For the purposes of the present investigation the main results of the in-vitro tests are: (1) the demonstration of the existence of the Vi antigen and (2) the evidence of its presence in strains of intermediate agglutinability and virulence, which represent the most common type of *B. typhosus*.

ITS PROTECTIVE ACTION IN PASSIVE IMMUNISATION

The rabbit sera described in the previous section and other sera obtained from subsequent bleedings of the immunised rabbits were next tested for protective action against infection with the most virulent strain Ty 2. The sera were kept without the addition of any disinfectant and the sterility of each sample was ascertained prior to its being used for intramuscular inoculation into mice. One to two days after the serum injections the test dose was inoculated intraperitoneally. Table IV. gives a sample experiment.

TABLE IV.—*Passive Immunisation*

Serum No.	Rabbit sera injected into mice intramuscularly two days prior to test dose. Titre of antibodies present in the serum. H	O	Vi	Dose of serum in c.cm.	Number of mice tested by intraperitoneal inoculation of strain Ty 2 (150×10^6 organisms). Tested.	Survived.
62 II.	10,000	5,000	400	0·5	4	4
				0·25	4	4
				0·1	4	3
74 II.	5,000	2,000	200	1·0	4	4
				0·5	4	0
64 II.	1,000	50,000	0	1·0	4	0
72 II.	20,000	10,000	0	1·0	4	0
73 II.	5,000	20,000	0	1·0	4	0
Controls with normal mice— Full test dose (150×10^6 organisms)					4	0
Half the test dose (75×10^6 organisms)					4	0

The results reproduced in this Table do not call for much comment. The two sera containing Vi antibody exert a powerful protective action, whereas the three sera devoid of Vi antibody are of no protective value whatsoever. The serum No. 62 II. with the higher content of Vi antibody (titre 1 in 400) has a much higher protective power than the serum No. 74 II. with the lower content of this antibody (titre 1 in 200).

The potency of the Vi antibody in protective action appears particularly striking in view of the comparatively low titres of its in-vitro action, which are in contrast to the high titres of the O antibody. The H titres, although for the sake of completeness recorded in Table IV., need not be considered in this connexion, since it is well known that H antibodies are negligible as protective agents. The O antibody, however, whose important rôle in antibacterial immunity is firmly established, makes a curiously poor performance in this experiment, when an in-vitro titre of 1 in 50,000 finds no expression in the in-vivo action.

The Vi antibody was also tested for protective action in the absence of the O and of both the O and H antibodies. The serum No. 62 II. was by repeated and massive absorption freed from these latter antibodies, until none were demonstrable in a dilution of 1 in 20. The Vi titre remained unaltered and the absorbed sera were found as potent in protective action as was the unabsorbed serum.

Differing Rôles of the Vi and O Antibodies

The protection experiments described in previous sections were all planned with a view to testing the efficacy of active or passive immunisation by subsequent infection with a strain of extreme inagglutinability and highest virulence. To obtain a more complete picture an experiment was conducted in a different way.

Two batches of mice, each numbering fifty, were immunised by subcutaneous inoculation of vaccines prepared from strains of the two extreme types. The vaccine from the virulent strain Ty 2 was given in the same dose as in the experiment described in Table I.—i.e., 200 and 400 million organisms at two days interval; the vaccine from the avirulent strain Ty 901 was used in twice that amount, since previous

experience with vaccines from this type of strain (Table I.) had shown that the smaller doses had no protective effect. Each batch of the immunised mice was then divided into four groups and these were tested, along with groups of control animals, by intraperitoneal inoculation of 2 M.L.D. of the two strains which had been used for the protective inoculations and also of two strains of intermediate agglutinability and virulence.

The result of this experiment (Table V.) appeared difficult to interpret. If the figures for the two

TABLE V.—*Active Immunisation. Protection against Infection with different types of* B. typhosus

Test dose inoculated intraperitoneally.				Mice immunised with vaccines from strain.				Controls. Normal mice tested with			
Days after second dose of vaccine.	Strain.	Type.	Dose in million of organisms.	Ty 2. (Dose 600 × 10^6.)		Ty 901. (Dose 1200 × 10^6.)		Full test dose.		Half test dose.	
				T.	S.	T.	S.	T.	S.	T.	S.
17	Ty 2	Inagg. Virulence high.	200	12	12	12	0	12	0	10	0
20	"Mrs. S."	Inter-mediate	600	11	6	11	0	12	0	10	1
19	Ty 1	Inter-mediate	800	12	5	12	1	12	0	10	0
18	Ty 901	Agg. Virulence low.	1600	13	1	14	7	14	0	10	2

T. = tested; S. = survived.

intermediate strains are first disregarded and only those for the two extreme types Ty 2 and Ty 901 are considered, it will be seen that each vaccine protected only against infection with the homologous strain, and that in the case of the strain Ty 901 the degree of protection was not very high. The inefficiency of the vaccine from Ty 901 in protection against Ty 2 is in accord with the results shown in Table I. and is readily explained by the absence from this vaccine of Vi antigen. The failure of the vaccine from Ty 2 to protect against the strain Ty 901 is obviously due to the insufficient quantity of O antigen administered by the protective inoculations, since this vaccine has been used in half the dose of that of strain Ty 901.

The results obtained with the animals immunised with the vaccine from Ty 901 and infected with the two intermediate strains "Mrs. S." and Ty 1 are also readily interpreted. It has been shown in Tables II. and III. that both these strains possess Vi antigen, which renders them resistant to the action of O antibodies. But the low degree of protection against the two intermediate strains displayed by the mice which had been immunised with the vaccine from strain Ty 2 was rather puzzling. It seemed paradoxical that mice from the same batch of immunised animals should be better protected against the most virulent strain Ty 2 than against the less virulent strains "Mrs. S." and Ty 1. Heterogeneity of the Vi antigen could not be suspected, since the in-vitro tests described in a previous section clearly indicated that this antigen was uniform in all the strains tested.

It will be observed that the number of organisms inoculated as the test dose varied very considerably with the four strains recorded in Table V. To keep the test dose of each strain at the constant level of 2 M.L.D. this procedure was unavoidable. However in the case of Ty 901, the strain of the lowest virulence, the test dose of 1600 million organisms very closely approached that number of bacilli which in previous experiments [2] had been found to produce lethal effects when administered as dead vaccine to mice. It seemed therefore most likely that the unsatisfactory protection against strains of lower virulence was due to the toxic effect of the large inoculum used. This hypothesis was tested in the following experiment (Table VI.).

TABLE VI.—*Neutralisation of Endotoxin*

Rabbit sera: 1 c.cm. of each serum injected into mice intramuscularly two days prior to test dose.				Mice tested by intraperitoneal inoculation of dead vaccine from strain Giglioli. (10,000 × 10^6 organisms.)	
Serum No.	Titre of antibodies present in the serum.				
	H	O	Vi	Tested.	Survived.
62 III.	10,000	2,000	400	4	0
74 III.	2,000	2,000	200	4	1
67 II.	5,000	5,000	100	4	3
67 III.	5,000	2,000	100	4	1
64 II.	1,000	50,000	0	4	4
69 II.	2,000	20,000	0	4	4
72 II.	20,000	10,000	0	4	3
73 III.	5,000	10,000	0	4	2
Controls with normal mice— Full test dose (10,000 × 10^6 organisms)				10	1

The rabbit sera previously used in passive protection experiments were tested for their capacity of neutralising the toxic effect of killed vaccines. The mice received 1 c.cm. of the immune sera intramuscularly and two days later the test dose of killed bacilli was inoculated intraperitoneally. Although it had been shown in the previous paper [2] that the most virulent strains are not more toxic than those of lowest virulence, it was, nevertheless, thought advisable to prepare the test vaccine from a virulent strain in order to obtain a suspension containing both the O and Vi antigens. After preliminary tests for toxicity the dose of 10,000 million organisms of the strain Giglioli, killed by heating for 2 hours at 58° C., was selected as test dose.

It is seen from Table VI. that the four immune sera which contained no demonstrable Vi antibody but had a high content of O antibody possessed a high neutralising power against the toxic effect of the vaccine. Of 16 mice given this type of serum 13 survived. In the corresponding group of 16 mice which had received immune sera rich in Vi antibody but comparatively poor in O antibody only 5 survived. The neutralising effect of the high-titre O sera was also strikingly demonstrated by the different clinical picture observed in the survivors in the two groups. The 5 survivors in the latter group all showed definite symptoms of illness during the first day following the inoculation of the test dose. On the other hand, in the group of mice protected with the high-titre O sera the great majority of the animals which survived showed no symptoms of illness whatsoever.

The result of this experiment clearly indicates that the O antibody has a definite neutralising effect on the so-called endotoxin of *B. typhosus*, whereas the Vi antibody is incapable of this action. This is in accord with the fact that virulence and toxigenicity of *B. typhosus* are independent of each other.[2] Just as the Vi antigen present in virulent strains does not cause any increase in toxicity, so the Vi antibody does not contribute towards the endotoxin-neutralising power of the serum. It is not claimed that the O antigen is the sole factor associated with the toxic action of killed bacilli; other constituents of the bacterial cell may also play a part. But it is the O antibody alone amongst the three different

antibodies demonstrable in antityphoid sera that shows a definite relationship to the content of endotoxin-neutralising bodies in the serum.

The O antibody, which is known to exert bactericidal (Felix and Olitzki [15]) and opsonising effects (Braun and Nodake [16]), quite apart from the neutralising action now described, appears to be the sole antibody required in protection against the type of strain of low virulence exemplified in Table V. by the strain Ty 901. The Vi antibody per se is entirely without effect on organisms of this type, since they are devoid of Vi antigen.

Clinical Bearing

The results of the experiments presented in this paper obviously have a direct bearing on the theory and practice of antityphoid inoculation and of serum therapy of typhoid fever. Doubts will possibly be voiced as to whether the facts established in experiments with mice are also valid with regard to the disease in man. Such a view, however, does not seem to carry weight. The basic element in the pathogenesis of typhoid fever is the bacteriæmia. And there is no reason for the belief that the antibacterial defence mechanisms evolved in one animal species are not at work when another species is invaded. In this connexion the fact may well be recalled that in the case of the O and H antibodies it was clinical observation and the analysis of the serum reactions of typhoid patients that first led to the recognition of the different immunological significance of the two types of antibody (Felix [7]). This conclusion was subsequently corroborated by experiments with guinea-pigs (Arkwright [6]) and mice (Topley,[8] Schütze [9]). The Vi antigen and antibody are approached by the opposite route and the relative importance of their effect on the course of the disease in man will be assessed by the clinical pathologist. Two procedures suggest themselves: (1) investigation into the correlation between the severity of the disease and the inagglutinability (i.e., virulence) of the culture of *B. typhosus* isolated from the patient's blood; (2) investigation into the relationship between the clinical course and the appearance of Vi antibodies in the patients' blood-serum.

ANTITYPHOID INOCULATION

With regard to prophylactic inoculation the relevant result is that the Vi antigen must be taken into consideration. The importance of perfect smoothness of the cultures used for making typhoid vaccines, first established by Arkwright [6] and more recently emphasised by Grinnell [3] and Perry, Findlay, and Bensted,[4] will not be diminished as a result of the present investigation. The smooth O antigen remains an essential element in virulence and in immunogenic value. This has been clearly indicated in both the preceding [2] and the present paper. It is evident, however, that in virulence as well as in protective action the smooth O antigen of *B. typhosus* is not the sole factor concerned. It shares its place with the Vi antigen.

It cannot yet be stated exactly in what way this newer knowledge will affect the accepted methods for making typhoid vaccine. The essential properties of the Vi antigen—i.e., resistance to heat, to various chemicals, and to storage—must first be studied adequately. It is obvious, however, that to ensure maximum efficacy of the vaccine the strain or strains selected must have the highest possible content of Vi antigen, in addition to the normal quota of O antigen. In this connexion it is necessary again to emphasise the two facts—namely, that the degree of agglutinability, which reflects the absence or presence of Vi antigen, is a remarkably constant property of different strains of *B. typhosus*; and that the Rawlings strain, which is so widely being used for the preparation of typhoid vaccine, belongs to the sensitive type which is devoid of Vi antigen (Felix [10]). By some curious coincidence it happened that two of the three strains used by Arkwright [6] in his protection experiments, the strains Ty 901 and Rawlings, were of the latter type, while no strain of the inagglutinable and highly virulent type was included in his series.

The possession or lack of Vi antigen, though remarkably constant in strains of *B. typhosus* when maintained under standard conditions, are by no means properties incapable of variation. Perry, Findlay, and Bensted [11] recently accomplished the transformation of the avirulent Rawlings strain into one of high virulence by passage through the mouse, and the present writers observed variations in agglutinability and virulence under varying conditions of growth. The consistent search by Perry, Findlay, and Bensted [12] for a method of increasing the protective value of typhoid vaccine by increasing the virulence of the strain used is undoubtedly an attempt in the right direction. The theoretical basis of this procedure is the high protective value of Vi antigen, demonstrated in the present communication.

It has not yet been investigated whether the facts established in experiments with *B. typhosus* are applicable also to *B. paratyphosus* A and B and more generally to other bacteria which also do not produce the typical exotoxin. Reference should, however, be made to a paper recently published by Day [13] who described "species immunity to virulent streptococci," due to a special antigen which is related to virulence and is common to both hæmolytic and non-hæmolytic streptococci.

SERUM THERAPY OF TYPHOID FEVER

The value of antityphoid sera in the treatment of typhoid fever has been and still is a matter of controversy (see Petrie [14]). The view was even held that through their lytic action on the bacteria such sera might be harmful to the patient, since the endotoxin is suddenly liberated without being neutralised.

The potency of the Vi antibody in protective action against infection with the highly virulent type of *B. typhosus* (Table IV.) and the definite neutralising effect of the O antibody on the so-called endotoxin (Table VI.) seem to justify the expectation that a serum containing both these antibodies will prove to be of value in the treatment of typhoid patients. It has been shown in this paper that the reactions between the two kinds of antigen and antibody take their course independently of each other and that there is no summation of the effect of the two reactions. The therapeutic serum should, therefore, contain effective amounts of each of the two antibodies, which are amenable to quantitative estimation by both in-vivo and in-vitro methods.

Horses are now being immunised at the serum department of the Lister Institute and it is hoped that a supply of the serum will shortly be available for experimental and clinical trial.

Summary

The factor present in virulent strains of *B. typhosus* and responsible for their virulence and inagglutinability is an antigen.

This antigen is separate and distinct from the O and H antigens of *B. typhosus* and renders the O antigen resistant to the action of the O antibody.

The symbol Vi (referring to virulence) is suggested for this antigen and the corresponding antibody.

The Vi antibody is demonstrable by agglutination and absorption tests; its in-vitro titre is comparatively low.

Active and passive immunisation disclose the powerful protective action of the Vi antibody.

The O antibody, which is known to exert bactericidal and opsonising effects, also neutralises the endotoxin of *B. typhosus*, whereas the Vi and H antibodies are incapable of this action.

The bearing of these facts on the theory and practice of antityphoid inoculation and of the serum therapy of typhoid fever is discussed.

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THE ADMINISTRATION OF PARALDEHYDE BY THE RECTUM AS A PRELIMINARY TO GENERAL ANÆSTHESIA

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So widespread is the dread of anæsthesia induced by what are still the ordinary methods that it is almost a commonplace to hear a patient protest before operation that it is not the actual operation that he or she fears but the anæsthetic. Latterly, through the more general use of basal narcotics, much has been done all over the world to eliminate this dread, and the purpose of this paper is to record briefly the results of an extended trial of one such narcotic at St. Andrew's Hospital.

Out of the many drugs at our disposal we looked for one which was easy to administer, was comparatively non-toxic and, at the same time, constant in its action; paraldehyde seemed to fulfil these conditions best. Paraldehyde $(CH_3CHO)_3$, an ethane[1] derivative, is a product of the polymerisation of acetaldehyde (CH_3CHO), and it is classed with avertin (tri-brom. ethyl alcohol CBr_3CH_2OH) and chloral ($CCl_3CH(OH)_2$) as an hypnotic. It is a colourless liquid, soluble in water to the extent of 1 in 10, more soluble in ether, and said to have an unpleasant ethereal odour, though this latter property has not proved a disadvantage in practice, either to the patient or his attendants. Though it acts by depressing the cerebral cortex, there appears to be a safe margin between hypnosis and medullary depression. It is excreted mainly by the lungs and kidneys. Death is caused by respiratory failure. A case is recorded where as much as two ounces were given by the mouth and only prolonged sleep resulted. It was recommended by Cervello as long ago as 1883. Its pharmacological antidotes[2] are picrotoxin, coriamyrtine, and camphor—stimulants to the cerebral cortex.

[1] Clark, A. J.: Applied Pharmacology, London, 1933.

Our procedure is as follows:—

The patient is prepared for operation in the ordinary way. When considered unnecessary the enema is omitted. (In our early cases it was thought that there was a tendency on the part of the patient to return the paraldehyde solution when an enema had been given previously. This may have been due to the solution itself, which has since been modified slightly.) Rectal irritation, when present, may be allayed by a chloretone suppository (grs. 10), though only in exceptional cases is one required. Our rule is to give one drachm per stone of the patient's body-weight in twelve ounces of saline. It appears, however, that patients with blood pressures on the low side require proportionately lower dosages. To overcome the burning sensation complained of in some cases gum acacia has been added to prevent the tendency of the drug to come out of solution and irritate the mucous membrane of the rectum. Four grains of the powdered gum acacia are added for every ounce of saline used.

The solution, at body temperature, is given by the rectum 1½ to 2 hours before operation, very slowly by funnel and catheter, with the patient lying on the left side and the buttocks slightly raised. During the administration, which occupies 30 to 40 minutes, the ward is kept as quiet as possible. The patient comes under the influence of the drug in about 25 to 45 minutes, sleeping quietly and quite unconscious of his surroundings. In this condition he is transported to the theatre. Induction is accompanied by very little excitement, except for occasional talkativeness. The rate of induction and depth of narcosis resulting from a given dose of the drug vary slightly in different patients, and so it is as well to begin inducing early to be on the safe side. If anything, the condition of the patient is all the better for his being kept a short time in the ward before proceeding to the theatre. During this time he should be kept under observation, though no respiratory or other difficulties are to be expected; he lies quietly on his left side, the limb reflexes are lost and the corneal reflex depressed; the cough reflex is still present; the pupils are contracted. Several patients can be treated together by the ward staff, ready to proceed in their turn to the operating theatre. An injection of atropine is usually given half an hour before operation.

The blood pressure taken before the administration of the drug and again in the theatre showed an average fall of systolic pressure of 22 mm. (varying from 0–50 mm.) and an average fall of pulse pressure of 9 mm. (varying from 0–20 mm.). The pulse-rate is not perceptibly altered. It has been our practice to continue anæsthesia with gas-and-oxygen and, if necessary, a minimal amount of ether in addition. This latter may be required for the skin incision, the peritoneal incision, or during dragging on the mesentery for any reason, though a surprisingly small amount is required for full surgical anæsthesia. It is at these moments that the coöperation of the anæsthetist is so important to ensure success. When relaxation has been obtained ether can usually be discontinued. De-etherisation can be brought about at the end of the operation by the use of 5 or 10 per cent. carbon dioxide oxygen inhalations. The absence of bronchial secretion makes the response to inhalation methods all the more delicate, and the breathing is devoid of that mucous rattle which is frequently heard when inhalation methods alone (especially ether) are employed. The colour of the patient is sometimes sallow after the paraldehyde has been given, but quickly improves when gas-and-oxygen is administered, and then usually remains good throughout the operation. On return to the ward the patient recovers consciousness in one-half to two hours, depending on the amount of additional anæsthetic used at operation, though drowsiness may continue for 6 to 14 hours.

[2] Meyer, H. H., and Gottlieb, R.: Experimental Pharmacology, translated from the German by V. E. Henderson. Philadelphia, London, and Montreal, 1926.

During unconsciousness the relaxed jaw and tongue require watching, and Hewitt's airway or swabbing of the pharynx is useful in cases likely to suffer respiratory difficulty, but no more than ordinary care is demanded in most cases. The patient, once roused, can be put in Fowler's position or on the left side, and is then allowed to go off to sleep again—which he generally does. A rectal washout on return from the theatre is not necessary. Post-operative morphia may be dispensed with in some cases. Post-anæsthetic vomiting is slight or absent. Hiccough sometimes occurs, but is well controlled by the inhalation of 5 or 10 per cent. carbon dioxide, and is of no serious consequence.

To avoid any tendency to atelectasis it has been our practice to give 5 per cent. carbon dioxide in oxygen as an inhalation for a short while every four hours for the first day. On the day after the operation there is diminished sensibility to pain and less restlessness, factors which favour post-operative healing.

It is our opinion that post-operative pulmonary complications — e.g., bronchitis and bronchopneumonia—are more frequently absent and, when they occur, less severe than when ordinary inhalation methods are used, although it is not easy to obtain figures to substantiate this. It might be argued that the shallow breathing would predispose to these difficulties, but even without the excessive use of carbon dioxide inhalation this has not, in our experience, proved to be the case.

In all, 200 *consecutive* surgical cases have been anæsthetised by this method. In this series there were nine deaths, but these could in no way be attributed to the anæsthetic. The advantages of the method are obvious. The excitement of an operation and the mental strain of the events which lead up to it are removed; the patient goes to sleep in bed, not realising in many cases that the operation has taken place and the ordeal is over, and convalescence is in consequence easier and less disturbed. From the nursing point of view, the time lost before operation is more than compensated by a quicker convalescence. There is also a definite saving of time in the anæsthetic room between operations. The drug itself is consistent in its action and requires no complicated technique for its administration. It has no depressing effect on the heart. Children take proportionate doses well, the aged and very toxic patients not so well; in the latter there is a tendency for the paraldehyde solution not to be well tolerated. In cases of colitis and ulceration of the rectum the drug is definitely contra-indicated. Its use is obviously less practical in surgical emergencies. In cases where, for some reason or other, it was possible to give only a small dose, no harm was done and anæsthesia was induced by the ordinary methods. In one case of severe jaundice, with marked hepatic insufficiency, the drug was given with no harmful effect. In operations about the head and neck freer surgical access is possible, and in gynæcological operations (especially for perineal repairs) healing is favoured by the post-operative calm.

I have been fortunate, in my endeavour to give this method a trial, to be associated with Mr. J. M. Milloy, Dr. Joyce Morgan, and Dr. Catherine Lendrum, who have afforded me every assistance. To our two surgical sisters, Sister Jane Lynn and Sister Jessie McGregor, without whose coöperation success could not be attained, I am greatly indebted for the painstaking care with which they have tended the patients in the wards. In this short series we have all (patients, medical and nursing staff alike) been much impressed with the advantages of the use of this drug, so much so that it seems likely to establish itself as a routine method of induction for all ordinary surgical cases in the hospital.

INTESTINAL OBSTRUCTION CAUSED BY IMPACTED GALL-STONE

DIAGNOSIS BEFORE OPERATION

By Eugene Rosenthal, M.D.

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Intestinal obstruction caused by gall-stones is rare. Adams and Cassidy [1] found it in 6 cases only out of 500 operated on for intestinal obstruction in St. Thomas's Hospital during a period of twenty years. Because the condition is so rare and because the symptoms require urgent surgical intervention, the patient is usually operated on before the cause of the ileus is diagnosed. This may account for the fact that gall-stone obstruction is usually only diagnosed at operation. In a recent case under my care it was possible to make an exact diagnosis beforehand.

A woman, aged 45, was seized with severe colicky pains in the middle of the lower abdomen, which lasted for about an hour. On the next evening the pain reappeared and was more violent, and she vomited. The pain was so bad that she was given a hypodermic injection by her family doctor. As he had found diabetes eight weeks previously he also gave her a dose of insulin. On the next day she had a good deal of meteorism but passed very little gas, and repeated enemas only yielded a small quantity of brownish fluid. The third and fourth days of her illness were chiefly characterised by bilious vomiting. The temperature throughout was normal.

I saw her on the fourth day. She did not give the impression of being seriously ill; her colour was fresh, her tongue moist, and she gave a calm and comprehensive account of herself. No abnormality of the chest organs was found except an elevated but freely moving diaphragm. The abdomen was markedly distended and the umbilicus retracted. There was no abnormal dullness in the lower parts of the abdomen and the liver dullness was normal. Nor was there any tenderness or muscular contraction. Nevertheless the pulse-rate was about 120 with a normal temperature, so that the diagnosis of small intestine obstruction was hardly in doubt. Suspicion of gall-stones arose on account of the diabetes, and after repeated inquiries the patient admitted that she had had gastric trouble four years previously for which a cholecystography had been performed by the intravenous method but the gall-bladder had not been seen.

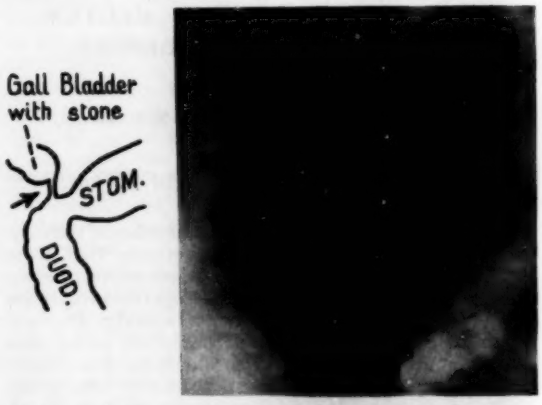

FIG. 2.—Radiogram showing the communication between gall-bladder and duodenum.

A radiogram showed dilated intestinal loops (Fig. 1) which located the obstruction in the small intestine. A

[1] Adams, T. E., and Cassidy, M. A.: Acute Abdominal Diseases, London, 1913, p. 146.

barium meal was then administered and was shown to pass through a canal, 3 cm. long and only a few millimetres wide, running upwards and outwards from the upper part of the duodenal bulb and ending in a somewhat larger organ (Fig. 2) which seemed to be the gall-bladder. The barium also showed the dilated intestinal loops. This abnormal passage appeared to be the canal through which the stone had passed and, despite the absence of gastric and gall-bladder pain, the diagnosis of perforation of a gall-stone into the duodenum was confidently made. The violent pains in the first days of the illness had been caused by impaction of the stone in the lower loops of the ileum (Fig. 3). Dr. D. Klimkò operated and found a gall-stone the size of a walnut (5 by 3 cm.) in the lower part of the ileum. The intestine was dilated above it and collapsed below it. There was peritonitis from which the patient died two days later. At autopsy a second stone was found in the gall-bladder and, buried in adhesions, the canal through which the first stone had passed into the duodenum.

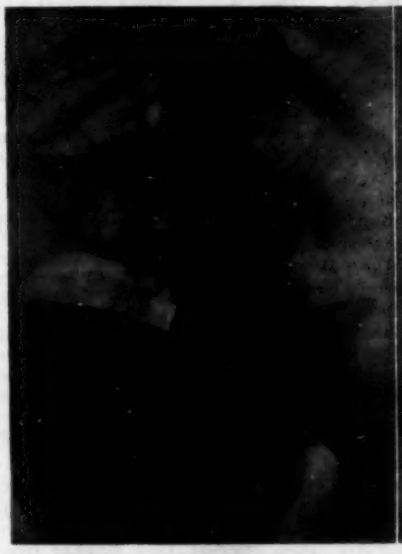

FIG. 1.—Dilating loops of the small intestine.

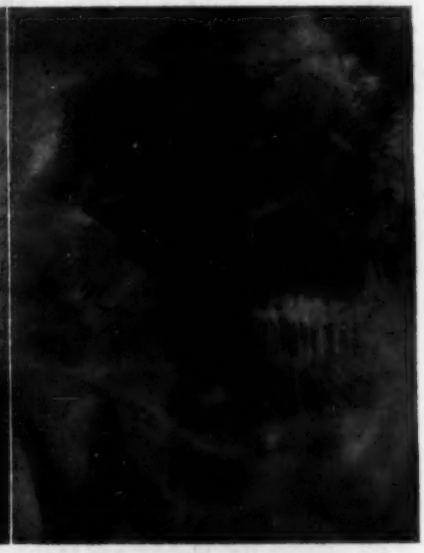

FIG. 3.—Showing the stoppage at the lower loops of the ileum.

The two facts which emerge from this case are: (1) a comparatively large stone may penetrate into the duodenum without causing pain; (2) pre-operative examination revealed the exact diagnosis and demonstrated the importance of carrying out the plan of examination suggested by me some years ago.[1]

STONE IN THE LOWER URINARY TRACT IN INDIA

EXAMPLES OF MULTIPLE CALCULI

By Rufus C. Thomas, F.R.C.S. Edin.

CHIEF MEDICAL OFFICER TO HIS LATE HIGHNESS THE MAHARAJAH JAMSAHEB OF NAWANAGAR

India may be looked upon as the home of urinary calculi. Stone is one of the commonest conditions with which a surgeon is called upon to deal. The following notes are prompted by an experience over a period of six years in a part of India where stone was very prevalent. The number dealt with in that time was about 250.

By far the greater number occurred in males above the age of 8 years. It was, however, quite a common thing to operate on much younger children. The youngest child I operated upon was 6 months old and had a stone the size of a hazel-nut. It must have taken several months to reach that size. I believe children of much smaller age have been dealt with by others. The proportion of females was small, and those operated upon were chiefly below the age of puberty. The reason for this is obviously the ease with which small stones can be passed through the female urethra. Two or three cases of stone in the prolapsed bladder in subjects of procidentia occurred, the stones being removed through the anterior vaginal wall. In one old lady a large stone was removed per urethram, after dilatation with Hegar's dilators. A good many stones impacted in the male urethra were dealt with, the greater number being held up at the commencement of the penile urethra. A small number of prostatic stones were met.

The commonest stone was the hard, smooth, oval urate, of which two were often found, and sometimes three. Next came the phosphatic. Both these types were often very large. The mulberry calculus was always small, on account of the pain and vesical irritability it caused, so that the patient early sought advice. Hæmaturia and pain at the end of micturition was the usual complaint in mulberry calculus. The other patients complained more of frequency, sudden cessation of the urinary flow, and a feeling of heaviness in the bladder or perineum. Pain only became a predominant symptom when cystitis was present, or a stone became impacted in the prostatic urethra.

A very striking thing about most of the cases was the long time over which symptoms were endured before advice was sought. Some of the adults, judging by the size of their stones, must have been suffering for years. This is also borne out by the multiplicity of stones in some cases. Several cases of long standing had to have a bladder drainage on account of the pronounced degree of cystitis. In one instance, the bladder was found to be so sloughy that it was impossible to stitch it up, each stitch cutting out as soon as inserted.

This was a Hindu about 30 years of age. He had three very large stones, and was in great pain on admission. He was running a high temperature, and was so ill that I was for a day or two doubtful whether he would stand an anæsthetic, and gave him morphia for two days to give him some sleep. I removed the stones on the third day, leaving a suprapubic tube in to drain the bladder. In spite of this he died about eight days later of septicæmia. This was the only fatality out of the total number of cases, and was not to be wondered at, in view of his bad condition.

TREATMENT

I removed every stone by the suprapubic route except those in the prolapsed bladder and the impacted

[1] Rosenthal, E.: Monats. Ungar. Med., 1930, iv., 59.

urethral stones. Many of the stones were very large, and therefore not suitable for lithotrity. Many patients had two and even three stones, and lithotrity would have been a very long operation. Cystitis was quite common. Lastly, and no doubt this reason weighed very largely with me, the removal of a stone or stones by the suprapubic route never took more than 20 minutes, and was often completed in ten minutes, thus saving valuable time. And there appeared to be no more risk. It had the added advantage of permitting direct inspection of the bladder wall. The average time spent by the patient in hospital was about 15 days. Most of the patients were cultivators, who came in in the slack season when there was very little work to be done in the fields, and a fortnight meant nothing to them. Time is of very little account in India. All cases were put on to a mixture of hexamine and acid sodium phosphate, grs. 10 each, for three days, and their stones removed on the fourth day.

The operative technique consisted of the usual subumbilical incision and separation of the recti and pyramidalis, which were retracted by an assistant. The peritoneum was then wiped upwards off the bladder, which was opened below it. After removal of the calculus the bladder was swabbed dry, then closed by a running suture of No. 0 catgut from above downwards, taking mucous membrane and muscle together. This suture, after knotting below, was brought up again as an invaginating suture and tied with the original end. Fascia was closed with No. 1 catgut in children and No. 2 catgut in adults. The skin was closed with Michel's clips. A catheter was passed and strapped in in the usual way and retained for nine to ten days. A few cases developed a leak through the incision, due, I am sure, to removal of the catheter a day or so too early. This cleared up in a short time after replacing the catheter.

The following cases are quoted, as they all have some points of interest, and serve to show the length of time during which the Indian patient will put up with much discomfort before seeking advice.

CASE 1.—This must be, I think, something of a record. An old man was admitted with some pain on micturition and slight pain in the lower abdomen. Palpation revealed a mass in the subumbilical region, tender on pressure. A sound could only be passed into the bladder with difficulty. Radioscopy showed a hazy, ill-defined shadow. On opening the bladder it was found to be absolutely full of small stones, the largest not being bigger than a small nut, and the greater number being the size of a small pea or less. The opening in the bladder was enlarged and the stones removed by the aid of a spoon. There were found to be 635 stones of all sizes. The bladder was entirely filled with them, and there could have been very little room for urine. How many years the old man had taken to accumulate such a vast quantity can only be left to the imagination. The bladder was closed in the usual way, and recovery was uneventful.

CASE 2.—A Hindu, complaining of great pain and difficulty in passing urine, showed marked priapism, and a sound could not be passed, being held up in the prostatic urethra. Radioscopy showed five large stones all lumped together. On opening the bladder two large stones were removed. The prostate was found to be very much enlarged, and on pushing the finger into the prostatic urethra a mass of stones was found to be impacted in it. All efforts to dislodge one of them with the finger failed, so an incision was made forward through the prostatic tissue, and three very large stones evacuated. They must have been present for many years. The cavity left in the prostate after their removal was big enough to put a small orange into. Why the man should have delayed so long before seeking advice is a mystery.

CASE 3.—A Hindu came complaining of frequency of micturition. The passage of a sound revealed a stone in the bladder. I had made it a rule to radiograph the whole urinary tract in all cases of stone, and this patient was found to have a stone in the right ureter, about four inches above the bladder. This stone appeared to be about the size of a small hazel-nut. The stone in the bladder was removed first and the bladder closed in the usual way. The peritoneum was then pushed off the right pelvic wall and the ureter exposed. In its course was found an indurated mass the size of a walnut at the level of the pelvic brim. The mass was not fixed, but could be raised slightly by the fingers. It was incised and a pear-shaped stone removed. The opening in the ureter was stitched over, a small tube placed in position through a stab-wound in the loin, and the abdominal incision closed. The tube was left in for 48 hours, but there was no drainage from it, and on its removal the wound closed without any trouble. The patient left hospital three weeks later quite well. This patient gave no history of renal or ureteric pain, nor was there in his history anything to lead one to suspect ureteric calculus. Had it not been for the routine radiography of the upper urinary tract the stone would have been missed altogether.

The above cases will serve to show that stone in the bladder may not be quite so simple as it sounds, and that a radiogram of the upper urinary tract is worth making in all cases. The temptation to be satisfied with the discovery of a bladder stone by the aid of a sound is very great, and one is apt to forget that further trouble may be lurking, unsuspected, in the higher regions.

ENTEROGENOUS CYST OF THE ILEUM IN AN INFANT

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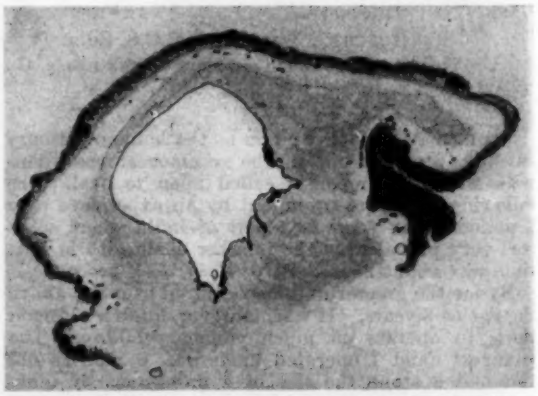
CYSTS lined by intestinal epithelium wherever found in the abdomen must be derived from gut (Evans[1]). They are now described as developmental enterogenous cysts. Their congenital origin is indicated by the valuable work of Lewis and Thyng,[2] who found that diverticula of the small intestine of the pig embryo



The epithelial-lined cyst encircled by smooth muscle and not in communication with the bowel lumen. The intraluminary projection of the mass is covered by normal mucous membrane.

occurred with remarkable constancy and arose from the canalisation of solid bud-like outgrowths from the bowel. Most of these completely disappear. Rarely they persist as congenital diverticula or become

[1] Evans, A.: Brit. Jour. Surg., 1929, xvii., 37.
[2] Lewis, F. T., and Thyng, F. W.: Amer. Jour. Anat. 1907, vii., 505.

sequestrated from the bowel lumen to form cysts which may be submucous, intermuscular, subperitoneal, intramesenteric, or omental in position. These two observers noted the same process occurring in the rabbit and in the human embryo: with the exception of cæcal enterocystomata this developmental curiosity is not met with in the large bowel.

A male child of 3½ months was admitted to the Cardiff Royal Infirmary on Jan. 11th, 1934. On the previous day vomiting had occurred and there had been no action of the bowels. On the day of admission the child constantly cried out in pain and passed blood and slime from the rectum. A history of constipation since birth was elicited. On examination the child was feeble, pale, and wasted. Temperature 98·4° F., and pulse 132. A hard oval lump could be felt in the right iliac fossa; blood and mucus were present in the rectum on digital examination. With such findings a diagnosis of intussusception was made.

Under general anæsthesia, through a right paramedian incision, a tumour was felt projecting into the lumen of the ileum three inches from the ileocæcal valve, and quite occluding the gut; proximal to this the small intestine was distended. By a longitudinal incision into the bowel a circular tumour covered by mucous membrane was excised together with a portion of the gut from which it arose; the incisions were closed in two layers. After progressing satisfactorily for two days the child collapsed and died. At the post-mortem no obvious cause of death was found; apart from hypertrophy of the bowel above the area where the tumour had been, no other abnormality was found in the abdomen.

The accompanying Figure represents the tumour after section. In the centre of whorls of smooth muscle lay a cyst containing yellow glairy fluid and seen on microscopical examination to be lined in places by typical intestinal epithelium. Part of the wall was denuded of epithelium, due perhaps to atrophy caused by intracystic pressure.

The case is one of intermuscular enterogenous cyst causing intestinal obstruction in an infant and simulating very closely intussusception.

I am grateful to Prof. A. W. Sheen, director of the surgical unit of the Welsh National School of Medicine, for permission to publish this record.

REVIEWS AND NOTICES OF BOOKS

Diseases of the Chest

And the Principles of Physical Diagnosis. Fifth edition. By GEORGE WILLIAM NORRIS, A.B., M.D., formerly Professor of Clinical Medicine in the University of Pennsylvania; and HENRY R. M. LANDIS, A.B., M.D., Sc.D., Professor of Clinical Medicine in the University. With a chapter on the Transmission of Sounds through the Chest, by CHARLES M. MONTGOMERY, M.D., formerly Physician to the Phipps Institute, Philadelphia; and a chapter on the Electrocardiograph in Heart Disease, by EDWARD B. KRUMBHAAR, Ph.D., M.D., Professor of Pathology, University of Pennsylvania, School of Medicine. London and Philadelphia: W. B. Saunders Company, Ltd. Pp. 997. 50*s*.

THIS exhaustive treatise on the physical diagnosis of the heart and lungs in health and disease holds a high place in the esteem of student and practitioner. Though intended primarily for the American student, the work requires no introduction anywhere among English-speaking peoples. The fifth edition reproduces the essential features of former ones, but many sections have been revised and new material has been added; for example, an account of the use of the bronchoscope in the diagnosis of disease of the bronchi and lungs.

The authors rightly insist that the facilities now available for specialised and laboratory methods of diagnosis should not be made an excuse for neglecting well-established physical methods. But radiology, a science unknown when the classical methods of physical examination were devised, has shown their limitations and provided for many types of disease a far more accurate means of determining the condition of structures within the thorax. It is a mistake to lead the student to expect to obtain more information from the results of auscultation and percussion than these somewhat crude expedients can provide. For example, it is difficult to believe that the most skilful percussion would indicate the shape of the heart as it is revealed by radiological examination in the various conditions of valvular disease (p. 242). The over-elaboration of percussion leads to waste of time, disappointment, and consequent depression, and withdraws attention from a more valuable general consideration of the patient's condition.

The number and excellence of the illustrations is praiseworthy. The photographs of diseased organs in situ are especially good. The lights and shades are so well reproduced that by merely looking at a plate through a roll of paper an almost stereoscopic view of the parts is obtained, and the practitioner who lacks time to study the text could learn much from a careful examination of the illustrations alone.

Atlas of External Diseases of the Eye

By HUMPHREY NEAME, F.R.C.S., Hon. Ophthalmic Surgeon, Royal London Ophthalmic Hospital. London: J. and A. Churchill. 1934. Pp. 110. 15*s*.

THESE 51 coloured plates are all well drawn and give excellent pictures of the conditions depicted. Several are from the author's own patients and have been previously published in the "Handbook" which he wrote in conjunction with Mr. Williamson-Noble. They represent typical examples of common conditions with a few uncommon ones—e.g., a remarkable case of congenital cavernous angioma of the sclerotic. All the drawings were made in the drawing department of Messrs. Theodore Hamblin. Each is accompanied by a short summary of the disease illustrated with the usual treatment.

Introduction to Study of the Nervous System

Second edition. By E. E. HEWER, D.Sc., and G. M. SANDES, F.R.C.S., M.B. London: William Heinemann, Ltd. Pp. 147. 21*s*.

THIS book, whose first edition was favourably reviewed in these columns, serves as an introduction, for the purposes of the student, to nervous anatomy and physiology. The former is treated by descriptive methods bearing chiefly on nerve-cells and tracts, and is illustrated by a large number of unusually simple and clear diagrams, most of them coloured. A few pages are also assigned to the experimental pathology of the neurone, and to the normal histology of neural and interstitial tissue. The neurophysiology is mainly of the applied order, though not exclusively; the normal paths of motion and sensation, and of the special senses, are concisely described, and the results of functional interference briefly set forth. Reflex action, conditioned reflexes, motor coördination, and the functions of the autonomic system form the subjects of other chapters. As is remarked at

the outset, the authors have sought to avoid unconfirmed and controversial statements, with consequent gain to the student. The value of the work is enhanced by a series of tables giving, for instance, the constitution of the cranial nerves, the afferent and efferent sympathetic supply of different organs and tissues, the contrasted effects of upper and lower motor neurone lesions. The least satisfying part of the book comes at the end, with the heading of Notes on Certain Pathological Conditions. For some reason not immediately apparent the choice has fallen on the curious medley of hemisection of the cord, complete section of the cord, aphasia, and nystagmus. To the last of these eight lines only are allotted.

A Text-book of Gynæcology

For Students and Practitioners. Third edition. By JAMES YOUNG, D.S.O., M.D., F.R.C.S.E., F.C.O.G., Gynæcologist, Royal Infirmary; Physician, Royal Maternity and Simpson Memorial Hospital, Edinburgh. London: A. and C. Black, Ltd. Pp. 411. 16*s*.

THIS book is primarily intended for the student, and will be found to cover the ground adequately. Dr. Young has not wasted space on detailed descriptions of the technique of operations, such as hysterectomy, but gives sufficient detail to enable the student to understand what is being done. The work has been thoroughly revised, and new chapters have been introduced describing the recent advances in our knowledge of the hormones of the ovary and the anterior pituitary gland, and giving an excellent account of the functions of the hormones as at present understood. The chapters on dysmenorrhœa, amenorrhœa, and uterine hæmorrhage have also been rewritten. A new chapter of special interest is that on pain in gynæcology. It will be of great use to the practitioner in the diagnosis of the origin of pelvic pain. A slight error has crept into the section on vaginitis, where 2½ per cent. picric acid in water is recommended for treatment. Picric acid is soluble in water to the extent of only 1 part in 90.

The book gives throughout a well-balanced account of pathology, diagnosis, and treatment, and is illustrated by a number of clear drawings and photographs.

A Handbook of Filterable Viruses

By R. W. FAIRBROTHER, M.D., M.R.C.P., Lecturer in Bacteriology and Assistant Director of the Public Health Laboratory, Manchester University. London: William Heinemann, Ltd. 1934. Pp. 204. 7*s*. 6*d*.

Dr. Fairbrother's small volume is welcome, for the need of a reliable introduction to this important subject has been felt. It is clearly written, free from all unnecessary detail, and the many points of controversy are presented in an unbiased manner. The first half of the book is devoted to questions of a general nature, cultivation and microscopy, epidemiology, immunity, and the nature of filterable viruses. Then comes the description of the individual viruses causing disease in man grouped as accepted, probable, and possible virus diseases. No other classification is attempted; a wise precaution. In view of Mervyn Gordon's work one might ask why it is that lymphadenoma is not mentioned along with the other "possibles"; and lymphogranulomatosis inguinale is surely worthy of inclusion. One or two statements are open to question. The assertion, for instance, that there is every indication that the viruses are a very heterogeneous group is hardly warranted, and the same applied to the statement that the inoculation of a single large dose in a susceptible animal is the severest test for the presence of living virus. However, these are minor points which do not seriously detract from a book which we commend to the notice of students of medicine, both undergraduate and postgraduate.

An Introduction to Practical Bacteriology

A Guide to Bacteriological Laboratory Work. Fourth edition. By T. J. MACKIE, M.D., D.P.H., Professor of Bacteriology, University of Edinburgh; and J. E. MCCARTNEY, M.D., D.Sc., Director of Research and Pathological Services, London County Council. Edinburgh: E. and S. Livingstone. 1934. Pp. 504. 12*s*. 6*d*.

THIS excellent little book has been enlarged and amplified but has not yet reached clumsy proportions. As an introduction to practical bacteriology it has few rivals. The technical methods described are of the best and the accounts of them are extremely clear. The description of various organisms, including protozoa and filtrable viruses, though highly compressed, are excellent and will fulfil all the needs of the elementary student if he has pursued his practical work seriously. We trust that the authors will not be tempted to make any further additions, since a book of this sort can easily be spoilt if it grows too big.

Spinal Anæsthesia

By GEORGE RUDOLPH VEHRS, M.D. London: Henry Kimpton. 1934. Pp. 269. 21*s*.

IN this book the author attempts to present a comprehensive account of spinal anæsthesia with novocain. In the early chapters we find descriptions of the anatomy and physiology of the subarachnoid system of spaces and circulation, and consideration of the chemistry and pharmacology of anæsthetic agents in addition to the description of ordinary anæsthetic technique. A number of experiments have been made on dogs, novocain being injected into the cisterna magna; and the conclusion arrived at was that the apparent immunity of the great bulbar centres when not too large a dose is thus administered is due to dilution of the anæsthetic drug by the large volume of cerebro-spinal fluid in this situation. Dr. Vehrs is an enthusiastic advocate of spinal anæsthesia and sometimes is not very judicious in his statements; for example: "it is agreed that spinal analgesia is, in proper hands, safer than other types of anæsthesia" . . . "a discussion of an ever lowering mortality-rate is not of material value except to recommend the procedure." He offers interesting hints on technique, among which are the advocacy of lateral spinal puncture and the maintenance of the spinal canal exactly horizontal by keeping the patient on his side for some minutes after injection to fix the novocain in the nervous tissue. Spread of the drug in the canal is held to be due to gravity diffusion alone, no other factors being considered at all. Dr. Vehrs believes it is possible to produce sensory nerve-block at will without any motor paralysis, and he describes a technique designed to this end; the insistence on the need for personal skill and experience of the operator is too great to be altogether convincing. The technique of a simple technical procedure of this sort should be easy to acquire, and its success should be assured.

BRITISH MEDICAL ASSOCIATION

MEETING IN BOURNEMOUTH

PROCEEDINGS OF THE REPRESENTATIVE BODY

THE first business with which the Representative Meeting of the British Medical Association is concerned year by year is a formal motion from the chair "that the return of election of representatives of constituencies . . . be received." This year murmurs of "agreed" were interrupted by excited cries of "No, no," while Dr. St. G. B. DELISLE GRAY (Brighton), leaping to the platform, drew attention to the sad case of Dr. R. A. Wilson of Guernsey. It appeared that Dr. Wilson, the hon. secretary of the local division, had for many years represented Guernsey, but that since the amalgamation last year into one division of Guernsey, Alderney, and Jersey, the other two Channel Islands had a voice in the election. The voice of Jersey had been raised in protest against Dr. Wilson, but no other nomination had been made in his stead, and Dr. Wilson stood, a Peri at the gate, awaiting a ruling. It took the best part of an hour to sort out the issues raised by this embarrassing contretemps, for while the sympathy of the meeting was clearly with Dr. Wilson, after his long journey to be with them, it was equally clear that representatives must be elected by the whole of a constituency and not at the discretion of the meeting. An amendment authorising Dr. Wilson to be present without the right to speak or vote was carried, and in the course of the day he was restored to full potency by a telegram from Jersey, in response to a final appeal, accepting him as a "temporary" representative.

Another point of procedure was involved in a motion by Brighton, supported by Kensington and Cambridge, and carried by a substantial majority, that spontaneous motions by divisions and branches which did not arise out of the Council's report should be taken early on the morning of the last day of the meeting, instead of being left to the end and hurriedly disposed of.

The chairman, Dr. E. K. LE FLEMING, whose appeal for support in expediting business had so far met with a poor response, then managed to get through a useful batch of motions with little delay. Dr. S. WATSON SMITH, hon. physician to the Royal Victoria and West Hants Hospital, was elected president of the Association for 1934–35—Mr. F. W. RAMSAY having been unable to serve by reason of ill-health——and Sir RICHARD STAWELL of Melbourne for 1935–36.

Research Scholarships and Grants

In connexion with the finance of the Association, Sir EWEN MACLEAN proposed and Sir CRISP ENGLISH seconded a motion that the Council should consider the desirability of increasing the amount allocated to research scholarships and grants. The criticism that the Association was concerned mainly with the cash basis of the profession was known by all present to be without foundation, but though much was spent indirectly not more than £1000 was directly allocated to research, and a more generous policy in this respect would be desirable. Mr. BISHOP HARMAN, as hon. treasurer, pointed out the enormous indirect contribution to medical science made by the Association, notably in B.M.A. lectures, in reports of ad hoc committees (such as that on arthritis), in the library, in the two special scientific journals, published at a loss, and, most of all, in the *British Medical Journal*. The motion was lost, but Sir Ewen remained unconvinced.

Medical Education

In presenting the report of the committee on medical education for general approval, Sir HENRY BRACKENBURY pointed out that an interim report which was now amplified had been before the meeting last year and no objections had then been made to its main propositions. It had since received a considerable measure of general endorsement, with only one dissentient. No stereotyped system of medical education was contemplated; provided a minimum was fixed there was ample room for differences of method and variety as between different schools. It was sought to raise somewhat the scientific status and general educational equipment of entrants to the profession; to design a coördinated course rather than separate blocks of study; to direct attention to health, its preservation, perfection, or restoration, and not to disease, so that a patient would be regarded as a person to be restored to the normal, if possible, and not as "an uninteresting vehicle containing some fascinating disease processes." The time of registration should be at the point where the study of human anatomy and physiology is systematically begun, and the student should previously have passed an examination such as the higher school certificate examination of the universities, taking subjects of general educational value as well as chemistry, physics, and biology. Normally the age of registration would not be below 18, but exceptional students, who had passed the necessary examinations, would be allowed to register at 17. A feature of the scheme was the insistence on a period of from six to nine months after the main part of the final examination had been passed before full licence to practise independently was granted. This period could be spent in a resident appointment or as a clinical assistant in a hospital, as a pupil assistant to a general practitioner or a medical officer of health, or in regular attendance at hospital practice at a medical school. The final examination would then be completed by a clinical and oral test which could be taken 57 months after registration, so that the length of the present curriculum need not be exceeded.

On getting the assurance of Sir Henry Brackenbury that a covering letter would be sent with the report intimating that only general and not necessarily detailed approval had been given by the various branches and divisions, Sir ROBERT BOLAM (for Newcastle) withdrew a cautious amendment to the motion recommending the approval and distribution of the report. Mr. ERNEST WARD (for Torquay) felt doubtful of the merits of a "decree nisi" which had to wait six months for confirmation (for example, could its holder become a locum?); but was informed that study of Sections 43 to 46 of the report (*Brit. Med. Jour.* Suppl. of April 21st, p. 193) would convince his division of the latitude of responsible work contemplated for the practitioner delivered into the world but still unregistered, and withdrew an amendment that this clause should be referred back to Council. The same fate, by permission, befell an amendment by Dr. HELEN LUKIS (for Kingston), which drew attention to the danger of allowing a student to qualify after administering only ten anæsthetics. In these days of varied drugs and methods and mechanisation of apparatus she felt that this number was quite inadequate, but readily consented to regard this as one of the small rocks which should not wreck the ship.

Sir Henry then proceeded, with the skill of an

experienced pilot, to steer it to port through more formidable barriers sighted by Dr. Hawthorne, Dr. M. Manson, Mr. McAdam Eccles, and Dr. A. Gregory. Dr. MANSON regretted, among other omissions, the absence of provision for a one portal entry to the profession and of intelligence-quotient tests for students. Dr. GREGORY thought that the proposed additions to the curriculum, notably instruction in genetics, growth, minor operations, and the psychoneuroses, and additional clinical experience would more than cancel the relief offered from dissecting every part of the body or preparing histological sections. Ways in which the students' burden could be lightened were the removal of compulsory attendance at formal lectures, the diminution of time spent on major surgery, and the addition of two or three weeks to each term. Mr. MCADAM ECCLES feared that the curriculum would be increased in length, but he was convicted of an error in arithmetic, though it was admitted that part of the vacations might have to be used in work by students in the later stages of their course. Manchester had instructed Dr. Gregory to move an amendment asking the Council to urge the raising of the age of registration forthwith to 18, with the triple object of preventing the admission of immature students, of raising their standard of general education to correspond with the higher general standard among the public, and of restricting the entry to a profession which was becoming overcrowded. According to Dr. Gregory, the number of doctors on the register had risen by 19,000 between 1902 and 1932, while the population had not increased in anything like the same proportion. The effect of raising the age *forthwith* as proposed (registration not being compulsory at the present time) would, it was pointed out, defeat its own object, and even in the future Sir Henry Brackenbury was not prepared to penalise the exceptionally intelligent student by causing him to mark time between school and registration. The obvious desire of all who offered criticism of the report from various angles not to delay its circulation was a notable tribute to the wisdom of its provisions, which were duly adopted.

Ethics of Medical Consultations

The rules upon the ethics of medical consultations in private practice as redrafted were submitted for the consideration of the Representative Body by Dr. HAWTHORNE, for the Council. An amendment (for Torquay) by Mr. ERNEST WARD substituted the milder expression of "regulations" for "rules" and was lost. The first ten of the 11 rules, which were accepted and passed without comment, contain an interesting new clause—including among the circumstances under which it is especially desirable that the attending practitioner should endeavour to secure consultation "when continued administration of any drug scheduled under the Dangerous Drugs Acts is deemed desirable in the case of a person who does not need it otherwise than for the relief of symptoms of addiction." The last clause in the following proposed rule (No. 11) gave rise to keen discussion.

> The practitioner consulted shall not supersede the attending practitioner during the illness with which the consultation was concerned, nor shall he act as attending practitioner to the patient in any subsequent illness, except after an explanation given to his former colleague, unless circumstances should make this latter course impracticable.

Dr. J. T. D'EWART (for Manchester) proposed the deletion of the last eight words as giving a loophole for evasion. Dr. HAWTHORNE, as chairman of the Ethical Committee, deprecated such rigidity as the rule would then demand; the former practitioner might be retired, travelling, or even dead. The amendment was lost, as was also one by Dr. H. M. BIRD (West Suffolk) to substitute "impossible" for "impracticable," and the proposed new rules were accepted without alteration.

The following set of four rules under the heading

Other Intra-professional Obligations in Private Practice

are new in the sense that no corresponding paragraphs appear in the existing rules.

1. When a practitioner in whatever form of practice believes that a patient who requests him to give advice or treatment is not under the care of another practitioner he is at liberty to do so, unless he has previously seen the patient in consultation with a colleague or when acting as deputy for a colleague. In either of these events, while dealing with any emergency that may exist, he should forthwith explain the position to his colleague.

2. A medical practitioner, before superseding another in the care of a patient, must satisfy himself that the other practitioner has been duly informed by those responsible for the patient that his services are no longer required.

3. When a practitioner in whatever form of practice is asked for advice or treatment by a patient and has reason to believe that the patient is already under medical care, and that the request is made without the knowledge of the attending practitioner, it is the duty of the practitioner so approached to urge the patient to permit him to communicate with the attending practitioner. Should the patient refuse this proposal the practitioner is at liberty to examine the patient and to tell the patient his findings and conclusions, but he shall not accept the patient for treatment.

4. When a practitioner in whatever form of practice is requested by a patient or the patient's representatives to visit him for the purpose of giving advice or treatment, and has reason to believe that another practitioner is in attendance, it is his duty to inform the patient that he cannot attend without the presence or consent of the practitioner actually in charge of the case. If the attending practitioner, after being duly informed, declines to meet the practitioner who has been invited, and the patient or his representatives persist in the request in full knowledge of this fact, or if the attending practitioner retires from the case, it is open to the other practitioner to provide the medical care required.

In introducing them, Dr. HAWTHORNE outlined the principles which they embody. While a practitioner is within his moral and legal rights in accepting any patient, this charter of liberty is qualified by considerations in the interests of the patient. Thus, if he knows that the patient is under the care of a colleague he must beg that this colleague be informed, or must refuse to accept the patient, except of course in emergency. The patient also may seek advice where he will; he may consult several doctors on the same issue, and may desire or demand a second opinion by, or even against, the advice, or with or even without the knowledge, of his attending doctor. But the claims of courtesy between colleagues remain. Alternative policies would be (*a*) no rules at all, in the conviction that the great majority of the profession play cricket according to recognised though unwritten rules, or (*b*) the division of the profession into two groups, one with experience and cultivated skill, to give second opinions, and the other with the wide horizon of the general practitioner. Such an arbitrary division would be condemned by public opinion, resisted by patients, and ignored by some doctors; moreover, any attempt to impose on a group an obligation not to give a second opinion would be resisted. It would be possible to stand by either of these policies (*a*) or (*b*), but not to combine them.

Many amendments were tabled. Dr. W. E. HEATH, for Rochester, Chatham, and Gillingham, desired (in vain) the remodelling of rule 2, or the reference back of the whole batch. Dr. H. GUY DAIN (Birmingham) claimed that the profession was already divided into two compartments and that a specialist must forgo certain privileges and opportunities that the general practitioner could enjoy. This amendment recognised the two groups as separate, and while forbidding those engaged in consultant or specialist practice to give advice or treatment to a patient at the latter's request, would allow the general practitioner to do so if he believes that the patient is not under the care of another practitioner. Sir ROBERT BOLAM pointed out the existence of an intermediate class for which Dr. Dain's resolution proposed no course of conduct—e.g., general practitioners doing valuable work as consultants in districts where no recognised consultants exist. Dr. HAWTHORNE said that though it might be in the interests of practitioners to confine themselves to one form of practice they could not be forced to do so. Birmingham's amendment was lost; one by Dr. A. K. GIBSON for Kensington to substitute (for the sake of uniformity) "has reason to believe" for "believe" in rule 1 was accepted by Dr. Hawthorne, as was also Dr. E. R. C. WALKER'S proposal to clear up ambiguity in rule 1 by the substitution of the words "to accede to the request" for "to do so." Dr. PETER MACDONALD'S amendment (for York) to refer rule 3 back to the council or, better, to the consultant group of the Association, was moved on the grounds of the difficulty which might confront the consultant whose patient refused to allow him to communicate with his doctor. "Under medical care" was an ambiguous phrase. For example, a patient under treatment by an ophthalmologist for tobacco amblyopia might be under his family doctor for a sprained ankle. The supreme instance where this rule would break down would be the case of venereal disease. The amendment was lost.

Buxton (Dr. L. S. POTTER) wished to legislate separately for treatment of a nature which could not reasonably be carried out under the direction of the usual medical attendant (e.g., spa treatment). Lewisham (sponsored by Dr. S. D. BHABHA in the absence of Dr. L. W. Bain) and North Northumberland (Dr. R. A. WELSH) were prepared to demand unconditional refusal on the part of the doctor even to examine a patient who will not allow communication with his own attendant, Dr. Welsh maintaining that it is better to lose a patient than a friendly neighbour; at any rate, the patient should be off with the old love before being on with the new. Manchester, with Dr. D'EWART as spokesman, supported by Holland (Dr. A. S. WILSON), would have "urge" strengthened to "insist" in line 6 of rule 3, and the last sentence of the rule deleted. Dr. F. A. ROPER, for Exeter, pointed out the fundamental difference that may exist between the lay view as to a patient's rights and that of an association of doctors—exemplified by the out-patient controversy. The Association held that no out-patient should be treated without a letter from his doctor, but King Edward's Hospital Fund thought otherwise. Dr. HAWTHORNE, for the ethical committee, felt that "insist" was a dangerous term to use to a patient, who might in his turn insist on the doctor ringing the bell in order that he might be shown out of the house. Sir HENRY BRACKENBURY took exception to an amendment moved by Dr. D. D. STENHOUSE STEWART, for East Yorkshire, to insert after the words "medical case" in rule 3, "in respect of the condition upon which his opinion is sought"; he quoted the truism that doctors do not treat diseases but a patient, and the meeting agreed; nor did Dr. DAIN, speaking for Birmingham Central, convince the Representative Body that to delete the words "in whatever form of practice" in the first line of rule 4, and to add the word "general" before practitioner in the same line would be a desirable alteration.

The rules were then accepted in their original form except for the minor corrections in rule 1 noted above. At this point the proceedings were interrupted for the announcement that Mr. H. S. Souttar had been elected chairman and Dr. Dain deputy-chairman of the Representative Body, 1934–1935.

Ethical Rules for Medical Inspectors

Considerable argument centred round the question whether a medical inspector (other than a school medical inspector) should himself be charged with the duty of informing the attending practitioner of the date, time, and purpose of his visit to a patient, or whether he could delegate this responsibility; the problem was solved by the inspiration of Dr. J. W. BONE to use the words "himself or through an agent" in the relevant clause.

Schools of Chiropody and Foot Hospitals

Dr. R. L. LANGDON-DOWN, acting for the chairman of the ethical committee, who in this instance dissented from the majority of his colleagues, proposed—

That the medical profession should accord a measure of recognition to approved chiropodists who accept the following definition of their work:—

> Chiropody means the treatment of abnormal nails, and all superficial excrescences occurring on the feet, such as corns, warts, callosities, bunions,

and undertake:

(*a*) to confine their practice to the field set out above;
(*b*) not, even within the above field, to operate for (1) any congenital or acquired deformity; (2) any condition requiring either a general anæsthetic or a local anæsthetic given by injection; (3) any condition involving any structure below the level of the true skin;
(*c*) not to treat any patient who is at the time under the care of a medical practitioner without his knowledge and consent.

Dr. Langdon-Down described chiropodists as an ancient confraternity, giving a service accepted (if silently) and even utilised by the medical profession and appreciated by the public. The field in which these specialists worked was restricted and was not cultivated by medical practitioners. The service was rendered without detriment to the public and without giving rise to any serious complaint. Of recent years the public had tended more and more to resort to chiropodists, whose methods of work and arrangements for receiving clients had developed correspondingly, and institutions such as foot clinics and foot hospitals were being widely established. Associated with this activity was the extension of courses of training. For many years members of the medical profession had assisted in this training by giving lectures and conducting examinations, and now the chiropodists aspired to a register for their members, with standards of instruction and conduct for those inscribed thereon. The ethical committee had invited doctors intimately acquainted with the aims and work of chiropodists to send relevant documents and to discuss their status. The committee had been impressed with the evidence of the good faith of the applicants for recognition, with the value of their work, and with the need for its medical recognition. The time had come when doctors must

either recognise or oppose organised chiropody. One of the minor issues was the acceptance or rejection in the *British Medical Journal* of advertisements for practitioners to help them in their organisation. There were many groups of chiropodists, but the Incorporated Society of Chiropodists was apparently the most important and was the one which had sought the coöperation of the Association. The two main issues were (1) what is to be the sphere of chiropody; what limitations should be placed on the activities, practice, and behaviour of its practitioners; (2) in what relation were these to stand to the medical profession if the latter should grant them some sort of recognition. The applicants had been surprisingly ready to accept suggestions for limitation of their sphere implicit in the proposed definition. The difference between this specialty and others which had been granted recognition was that practitioners of these others undertook not to treat any patient except under the direction and control of a registered medical practitioner. Serious practitioners of chiropody could hardly be asked to submit to this condition, because the public would assuredly not accept the position and would be driven into the hands of unrecognised chiropodists who were under no such obligation. The clause was appropriate to such specialties as massage or electrical treatment, because the doctor was in a position to direct and supervise them, but the patient long accustomed to employ a chiropodist could hardly be asked to enlist the supervision of his doctor every time he went to have his corns cut. Insistence on a rule that must become a dead letter would be highly inadvisable. Chiropody was a limited and fairly easily defined sphere of work, and men properly trained in the art would be all the more competent to distinguish cases which should be referred to a doctor. Long continued treatment like that needed for corns was in a different category from occasional treatment such as massage. It remained to be considered, if recognition was granted, what form it should take. Coöperation would doubtless be sought in respect of courses of training and assistance in lecturing; doctors would be asked to send patients to chiropodists for treatment when this seemed desirable; the columns of the *British Medical Journal* would be open to advertisements; and transgressors among approved chiropodists against the code of conduct laid down would be reported. Here was an opportunity, concluded Dr. Langdon-Down, which should be seized. If the medical profession stood aloof it would lose the power of directing and limiting the development of the specialty, or would force the public into the hands of those who might have an entirely inadequate training.

An amendment was moved by Dr. HAWTHORNE, for Marylebone, and seconded by Sir ROBERT BOLAM, for Newcastle-on-Tune.

That the work of chiropodists in dealing with corns and callosities being already known and utilised, the Representative Body does not approve of giving an official collective recognition to approved chiropodists in a more extended field.

Dr. HAWTHORNE said that chiropody was either (1) an æsthetic enterprise, or (2) a therapeutic measure. If it was the former, the medical profession had no more concern with it than with manicure or hairdressing; if the latter, diagnosis must precede treatment, and the minimum training for diagnosis was the medical curriculum. It was to the public interest to distinguish between those who offered treatment after having been trained under this curriculum and those who had not, and the medical profession must not help to confuse the issues between these two groups. The maintenance of these principles need not imply the expression of animosity, nor that the medical profession was anxious to put down unqualified practice; it did not imply restriction on any one member of the public from giving advice to another, even for a fee, or the prevention of any person from taking such advice. It implied only that responsibility for taking such advice rested on the patient himself. One at least of the foot hospitals had in a shop window cushions for heel and arches for feet and a diagram showing that 25 per cent. of the ills that affect mankind are respiratory; but a footnote added that a predisposing cause was the flattening of the arch of the foot or a similar misfortune. If the arch of the foot had to sustain such a pathological burden, said Dr. Hawthorne, no wonder it collapsed under the strain. Sir ROBERT BOLAM, in seconding, said that to legislate for a subsidiary profession and help map out their course of training would be a heavy burden of responsibility which it was not the medical profession's business to shoulder. The proposal was to legalise invasion of the ranks of certain specialist surgeons and also of general practitioners. Not all general practitioners refused to treat corns. It was, moreover, dangerous to allow persons who had not had a medical training to treat warts wherever these should occur. In regard to nails—surely abnormalities were mainly due to nutritional causes or to infection. Neither of these should be treated by a chiropodist. There was no desire to interfere with chiropodists, but also no desire to accord to any persons recognition for work in a medical field.

Dr. ELIZ. CASSON (Bristol) said there was no doubt that the care of corns was generally inefficient. The chiropodist started off with a knife in his hand, which was a surgeon's prerogative. From her large experience of looking after the feet of patients at a mental hospital she had come to the conclusion that most patients needed not so much the cutting of their corns but treatment of a fungus infection. Dr. J. H. THOMPSON dwelt on the difficulty of controlling such a service, and then Sir HENRY BRACKENBURY set out the present position.

They were not, he said, concerned with definition of the field to which the chiropodists could properly be allocated, but with whether recognition in *any* field should be granted. He asked the meeting to dilute strict logic with a little common sense. There was a practical situation to be dealt with. The chiropodists were rapidly and increasingly extending their activities beyond the field in which they should properly work and the council had been approached, with a view of regulating the position, by orthopædic surgeons and dermatologists. At least one hospital in London, and several in the country, had a chiropodist's department, employing chiropodists. There was a foot clinic and school of chiropody in Edinburgh, with which nine eminent members of the medical profession were associated, and on terms of mutual cordiality. The council of the Royal College of Surgeons of England held that some form of recognition should be given, and the meeting must bear in mind the possibility that recognition might be awarded by other bodies in the medical profession. The purpose of the council was to establish the propriety of a doctor sending a patient with a corn to a chiropodist if he so desired. Dr. Hawthorne's emphasis was on the need for diagnosis, but surely a layman knew when he had a corn. There was now an opportunity to keep chiropody in a certain field, binding the main body of that profession to accept

defined limitations. Mr. F. C. PYBUS, for the amendment, remarked that, generally speaking, pathological foot conditions were the result of deformities which were the concern of the doctor, and that a person without medical training might fail to distinguish melanotic sarcoma from a simple wart. Dr. NOEL WATERFIELD was for accepting and controlling the situation. Dr. J. S. MANSON agreed with Dr. Hawthorne, that the evidence of the spread of chiropody should make us suspicious and critical. Practitioners of the art were now being installed in drapers' shops as a lure. At one school a syllabus of over 700 lectures on anatomy, physiology, bacteriology and so forth was included in a course extending over four months, for which 30 guineas was paid, and in others the course lasted two years and cost 70 guineas. Dr. DE. LISLE GRAY said that the very fact that these schools were going ahead meant that unless action was taken their position would be consolidated. He was impressed by the willingness of chiropodists to enlist the support of doctors, and to follow our ethical ruling. There was no reason why the responsibility for guidance should be shirked. Dentists had been helped in this way and patients now went straight to dentists as a matter of course. In view of the fact that chiropody had been recognised by orthopædic surgeons the motion ought to be supported. Dr. HELEN LUKIS also spoke against the amendment. Most doctors, she said, had no desire to acquire a reputation as corn cutters, or to give ten minutes of an evening surgery to soaking corns. Dr. E. R. C. WALKER remarked that conservatism was not always synonymous with wisdom. In an atmosphere of friendly coöperation the chiropodist was much less likely to exceed his duty.

Dr. M. J. FENTON supposed that the Incorporated Society of Chiropodists wanted recognition in order to deal with small, unofficial organisations which gave an unsatisfactory training; but Dr. L. COHEN wondered what guarantee there was against a split in the ranks of chiropodists, of which one group, not accepting the agreed limitations of practice, might advertise themselves as "recognised by the B.M.A.," and get patients; while the others could say "*not* recognised by the B.M.A." and get still more patients. If the proposal for recognition was accepted the patient would tend to go to the chiropodist for all foot complaints. He suggested that this was the thin end of yet another wedge to whittle down the practice of doctors— a metaphor none the less effective for being mixed. Having started with the feet, might we not soon reach the head and have to deal with sight-testing opticians? Mr. SOUTTAR opposed the amendment. This was a larger question than that of corns. It was desirable to recognise ancillary services as they sprung up—for example, midwifery, massage and radiography. Should the chiropodists be allowed to develop independently of doctors, or were they to be controlled? Many of them were highly trained specialists, organised by medical men, and taught by orthopædic surgeons. Should not support be given to a body of men who want to be helped to do better work? Dr. LANGDON-DOWN said that surely it was not statesmanlike to shut down the whole question rather than to discuss freely the mode of recognition and conditions which might bring the specialty under proper control. Dr. HAWTHORNE, in his final appeal for the amendment, said that chiropodists were apparently not to be asked never to treat a patient, as were members of recognised auxiliary services, except "under the direction and control of" a medical man. This was the crucial point.

The amendment was carried by 102—65.

Agency for Introduction of Patients

Dr. Hawthorne differed from the ethical committee on another important question, and yet again an amendment sponsored by him was accepted contrary to the advice of the council. He proposed as an amendment:—

> That the Annual Representative Meeting regrets that the practice of the British Medical Bureau in relation to advertisements in the lay press and to the payment by practitioners to the Bureau of a proportion of fees received from patients remains without modification.

He explained that the British Medical Bureau was an agency for the sale of practices. The association took a share in its management and a substantial dividend from its profits. Among its activities was the maintenance of a list of practitioners who were prepared to take resident patients, and paid a guinea for the first year and 5s. for each subsequent year for a box number. Whatever fee the practitioner received from a patient was subject to a deduction by the Bureau. The first complaint was that this fee was payable as long as the patient remained in his house—that is, it amounted to a commission, and the second was that the list was advertised in the lay press with the object of attracting patients to one of the group of practitioners on the list. Supposing, said Dr. Hawthorne, a number of doctors, practising, say, deep X ray therapy, formed a bureau and employed an advertising agency, would that be considered ethical? Again, the fact that fees were subject to deduction was not specifically explained to clients and thus became a sort of secret commission. Dr. CASSON said that a large number of practitioners took resident patients, and some were penalised because the British Medical Bureau recommended only those who were prepared to pay them a 10 per cent. commission. It was understood that the association had taken over the Bureau, which was formerly called the Scholastic, Clerical and Medical Association, Ltd., in order to have an agency adopting its code of medical ethics, but the result seemed to have been otherwise. Prof. J. W. BIGGER was jealous for the honour of the association. The practice described was essentially a form of dichotomy, a secret commission divided not into two but into thousands of parts. He would doubtless be told that the Bureau was a profitable investment, but ethical considerations came first. Dr. J. W. BONE put up a stout resistance to these attacks, drawing attention to the professional and personal eminence of the directors of the Bureau, which had been conducted on much the same lines for over 40 years. He gave a brief history of what he described as a vendetta by a small group of representatives against its activities. When, in 1926, the Association had bought shares in the Bureau it gave an undertaking not to interfere with the work of the agency as a business concern or with its policy unless this conflicted with that of the Association. The attacks had been carefully considered by the directors, who reported to the ethical committee that (1) the register complained of had been published for more than 41 years, and had been advertised in lay as well as in medical papers; (2) practically all the applications came from advertisements in the lay press; (3) they did not regard the advertisements as unethical but as necessary for the business of the agency; and (4) it seemed clear the cost must be met by beneficiaries, and a continuous commission seemed to be the best method yet devised of arranging this. On this report the council had resolved by 44 votes to 3 that the practice of the Bureau did not conflict with ethical principles. Dr. E. H. SNELL drew attention to the

wide implications of this apparently simple amendment; if the procedure condemned were wrong so would be the acceptance of advertisements in the *British Medical Journal* for institutions for sick people, and of some at least of the money received by the vendor when selling a practice. Dr. DE LISLE GRAY said that surely it was insulting the intelligence of those who used the agency to assume they did not realise that a commission was paid. Sir ROBERT BOLAM pointed out that these advertisements had appeared in the same lay papers—the *Times*, the *Morning Post*, and the *Law Times*—for many years before the Association had any interest in the Bureau. He challenged the suggestion that such a commission as was paid was unethical; it was always understood that agencies charged a commission, either as a lump sum or piecemeal, and there was nothing wrong in this. If the meeting was not satisfied it must say so, when the directors of the Bureau would have to consider the question of resignation.

Somewhat surprisingly to most of those who observed the battle it did say so, passing the amendment by 94 votes to 76.

(To be concluded)

AMERICAN MEDICAL ASSOCIATION

EIGHTY-FIFTH ANNUAL MEETING

THIS year's meeting in Cleveland was characterised by large attendance (6293), excellent scientific and technical exhibits, and a growing recognition in its business sessions of the coming crisis in medical economics. The presidential address was largely concerned with the over-supply of doctors—not at all with the crying need of large sections of the population for more adequate medical care. In an age and a nation where it is reasonable to plough under cotton and wheat crops, it may not be surprising to hear the same type of remedy suggested for the excess of physicians, viz., a limitation of production.

The probability that health insurance, among other kinds of social insurance, may be discussed in the next session of Congress was foreseen. The time-honoured opposition of the Association to "any system whereby the State would in any way enter into the practice of medicine" was re-affirmed, but in so far as health insurance goes somewhat more temperately than in the past and not without evidence of a division of opinion among the rank and file. Indeed, the Michigan State Medical Society introduced a resolution in which it was stated that its commission sent to investigate health insurance in England had furnished a report which "raises certain grave questions concerning the policy of the officials of the American Medical Association toward health insurance and the effects of this policy on the practising membership . . ." This resolution was considered in executive session of the house of delegates, which means that all non-members of the house of delegates were excluded. A motion to have the resolution considered by the house as a committee of the whole was lost and a motion carried referring the matter to a special committee. This special committee succeeded in bringing in a report acceptable to the house. This report exonerates the officials of the Association, reviews the history of the opposition of the Association to compulsory health insurance, and concludes with ten principles laid down by the board of trustees as the essential bases for experiment in sickness insurance in the United States. As there is nothing in these ten principles inconsistent with a scheme for compulsory health insurance, their inclusion in the committee's resolution may perhaps be intended to offset to some extent their recital of opposition to insurance. Dr. J. D. Brook of Michigan suggested that a standing committee of seven members of the house of delegates be appointed to continue a study of this question, but his resolution was tabled.

The committee on medical economics gave some hint of the future policy of the Association in a report which states: "All said and done, sickness insurance was the product of the brain of the German chancellor, Bismarck, just half a century ago. Why? Not that adequate medical care should be provided for all, but because industry required the standardisation of expense to make more certain the exact cost of production, the better to meet keen world competition." This should be read in relation to a resolution from Indiana delegates, which points out that in European experience labour unions have never led a demand for sickness insurance, and requests the board of trustees to appoint a committee to contact, at the proper time, the leaders of organised labour.

A resolution roundly condemning the Nazi régime for expelling medical scientists "without justice or reason other than that they differed in racial origin or religion from that of their colleagues" was presented from New York. The committee on legislation and public relations, however, did not endorse this resolution, considering that the matter was covered by the more general terms of a resolution passed last year condemning the persecution of any individual on account of race or religion by any State, or under any flag. A California resolution complained that one of the departments of the Association had been recommending the pasteurisation of certified raw milk. This matter was referred to the committee on foods. The radio stations were thanked for their coöperation in matters of public education, but at the same time the board of trustees was asked to attempt some method of controlling the evil of the broadcasting of "unestablished remedies." A strongly worded resolution in condemnation of this practice was also addressed to the Federal Radio Commission.

For president-elect of the Association two names were placed in nomination: Dr. James S. McLester of Birmingham, Alabama, and Dr. Hugh S. Cumming, surgeon-general of the U.S. Public Health Service. The former was elected by 85 votes to 71. Dr. McLester is a native of Alabama, a graduate in arts of the University of Alabama and in medicine of the University of Virginia. He has studied medicine abroad at Göttingen, Freiburg, Berlin and Munich, and has had a distinguished career as teacher and practitioner in his native State. The meeting next year is to be held in Atlantic City.

LEASOWE OPEN-AIR HOSPITAL FOR CHILDREN.—This Liverpool hospital, near Leasowe, in Cheshire, with the beginning of the present year, has introduced a method of closer coöperation of the honorary medical staff and the resident medical officer. Under the new system all cases are admitted direct into beds allotted to honorary medical and surgical officers who will be responsible for their treatment. The report of the resident medical officer states that of the 572 patients treated 219 were cases of tuberculous bone and joint disease; of the non-tuberculous cases 199 were orthopædic. The average stay of the discharged surgical tuberculosis patients was 671 days; of the 67 discharged 88 per cent. were discharged with the disease quiescent; 4 cases were discharged unimproved. All tuberculous adenitis and tuberculous peritonitis cases were discharged in excellent condition with the disease quiescent after an average stay of 104 days.

THE LANCET

LONDON: SATURDAY, JULY 28, 1934

TYPHOID VACCINE: POTENCY AND VIRULENCE

RECENT years have witnessed an exuberant growth in our knowledge of the antigenic structure of bacterial cells. The resulting literature offers a formidable meal even to the professed immunologist, who must perforce attempt its digestion. But those whose interest lies on the practical rather than on the theoretical side, noting that exuberance has in this case justified its literal significance of fruitfulness, will desire to master those elements of the newer knowledge that have an immediate bearing on the practical problems of immunisation. In our present issue Dr. FELIX and Miss PITT record their latest observations on the factors involved in the virulence of the typhoid bacillus as tested in mice. In earlier studies they showed that strains of high virulence have, in the living state, the curious property of being relatively inagglutinable by sera that contain a high titre of antibodies acting on the "O" somatic antigen, which is one of the most characteristic components of "smooth" strains. In their present paper they show that this inagglutinability is associated with the possession of an additional antigenic constituent, that can be clearly differentiated from the ordinary "O" antigen by selective absorption of the corresponding antibodies. Mice immunised with a vaccine containing this additional antigen in an active form are rendered resistant to the injection of highly virulent bacilli. Mice immunised with a vaccine from which this antigen is absent remain susceptible to virulent strains. Antisera prepared by immunising rabbits with living virulent bacilli protect mice against infection with these strains; antisera prepared by immunising rabbits with killed virulent bacilli, or with avirulent smooth bacilli, have no such protective action. It would seem that heat-killed virulent bacilli have suffered an impairment of the antigenic potency of the particular component associated with high virulence sufficient to inhibit its capacity for inducing efficient antibody-formation in the rabbit, but insufficient to prevent the induction of active immunity in the mouse. If a relatively avirulent strain is used for testing—in which case the lethal dose of living organisms does not fall far below the lethal dose of killed bacteria, so that death must be regarded as resulting from toxæmia rather than from bacterial invasion of the tissues—it is found that the ordinary antisera, containing the "O" antibody, are at least as protective as the sera obtained by immunisation with living virulent bacilli. The new antigen and its corresponding antibody would thus seem to be concerned particularly with the reactions that inhibit tissue invasion.

Dr. FELIX has clearly added another observation of great practical importance to those that already stand to his credit in this field. Whether the sharp distinction that he draws between this new antigen, as determining virulence, and the ordinary smooth somatic antigen, as being mainly concerned in toxicity, is fully justified, and whether the facts that he has demonstrated in the case of the typhoid bacillus have analogies in other bacterial species, only the future can show. The essential significance of his findings lies in the demonstration that it is not enough to prepare our vaccines from smooth strains, as we had already learned to do, but that one smooth strain differs from another in its antigenic structure, and that we must select smooth strains possessing the right kind of antigen if we wish to protect against attack by strains of high virulence.

These observations of FELIX and PITT offer an explanation of the interesting results recorded by PERRY, FINDLAY, and BENSTED in a series of reports from the pathological department of the Royal Army Medical College. These workers had already been led, on the basis of a considerable series of experiments, to the conclusion that virulence for mice, rather than mere smoothness in the usually accepted sense, offers the best criterion of immunising power. In their latest paper[1] they offer additional and more detailed evidence in support of this view, showing that none of the commonly accepted tests for smoothness—colonial appearance, stability in saline, a negative Millon reaction, or the agglutinability of killed cultures by an "O" antiserum—can be relied upon as a proof of immunising value. They note, in agreement with the findings of FELIX and PITT, that their virulent and highly immunising strains are, in the living state, relatively inagglutinable with an ordinary "O" antiserum, though one at least of their agglutinable strains has shown a quite definite immunising capacity. Those who have a liking for tradition will learn with pleasure that the famous "Rawlings" strain of typhoid bacillus, which has played so honourable a part in the history of antityphoid inoculation, has, after a temporary lapse into senility and ineffectiveness, been successfully rejuvenated, and is now the most potent of the tested strains.

RE-EXAMINATION OF MENTAL DEFECTIVES

SOME characteristically outspoken remarks by the Recorder of London have drawn attention to the long intervals which the law interposes between the official occasions for reconsidering the detention of mental defectives in institutions. Sir ERNEST WILD'S comments were uttered in the course of criminal proceedings against GEORGE HENRY NEWTON, charged with an offence against a young woman who is under treatment at the Manor Certified Institution at Epsom. NEWTON was stated to be a married man, aged 31, living apart from his wife. The patient had been received at Epsom in January, 1931, under the usual order which is valid for 12 months and is subject to

[1] Jour. Roy. Army Med. Corps, 1934, lxiii., 1.

continuance under certain statutory conditions. She had been allowed out for the day on leave of absence from time to time; NEWTON, it was said, took her to his room for a week. He pleaded guilty to the charge. The young woman's alertness and intelligence in giving evidence obviously impressed the Recorder. She said she was 24 and had been at Epsom for 4 years. "Are you happy there?" asked the Recorder. "Well, not too bad," she answered. "Do you want to stay there?" "Well, I should like to get out as soon as I can." The Recorder observed that it was wicked that "these wretched creatures" could be detained for five years without any recent certification. "I think it is an interference with the liberty of the subject that there should not be an examination for five years." He desired a special examination to be made by one or two independent doctors to see if the young woman was a proper person to be detained any longer. The legal effect of the proposed examination is doubtful, but some of the learned Recorder's observations had suggested that he was unaware that the authorities in the case before him had followed the exact procedure prescribed by Parliament in the interests of the patients. In any event, the Old Bailey is hardly equipped to act as a court of appeal from the Board of Control. The judicial duty before Sir ERNEST WILD was the sentencing of NEWTON for a criminal offence upon a mental defective; he awarded a sentence of 12 months' imprisonment in the second division, telling him that he deserved no mercy. Had the issue been the duration of the patient's detention, it would have been material to know the full facts and medical opinions relative thereto. Judges and magistrates, of course, are sometimes moved to travel outside the judicial province and to denounce the law which it is their business to administer. There are famous instances where the ironic comments of the bench have led to the reform of obsolete or inconvenient legislation.

Under sub-s. (1) of Section 11 of the Mental Deficiency Act of 1913 an order sending a defective to an institution will expire a year later unless continued in the manner prescribed by the Act. Sub-s. (2) enacts that the order will remain in force for a year after the date when under sub-s. (1) it would have expired, and thereafter for successive periods of five years, if at that date and at the end of such period of one and five years respectively the Board of Control considers that the continuation of the order is required and makes an order for that purpose. The Board, before deciding upon continuance, is obliged by the Act to consider certain special reports. It must first consider a special report by the visitors (made within a month after having seen the patient) as to his or her mental condition and the means of care and supervision which would be available if he or she were discharged. The visitors must state whether they think the patient is "still a proper person to be detained in his own interest in an institution." Secondly, the Board must consider a special report by the medical officer of the institution as to the patient's mental and bodily condition. The latter report must be accompanied by a certificate that the defective is still a proper person to be detained. Thirdly, the Board must consider the report of any duly qualified practitioner who, at the request of the patient or his or her parent or guardian, has made a medical examination of the defective and the means of care and supervision available on discharge. It is worth while to remember this statutory insistence upon the "care and supervision" available on discharge when one recalls the hospitality which NEWTON offered. No other statutory provision for reconsidering the patient's detention exists except that, when the patient enters an institution while under 21, the visitors must reconsider the case within three months of his or her 21st birthday.

These being the requirements prescribed by Act of Parliament, it is hard to see any legal significance in the examination "by one or two independent doctors," which the Recorder has asked for. He can express a personal opinion that the law is wrong; but it would be unfortunate if his remarks gave the impression that the authorities in charge of the institution at Epsom have taken a fiendish delight in confining for five years without medical examination a patient who is perfectly sane. This would tend to foster the prejudice which sometimes inspires the award of vindictive damages against doctors in cases of lunacy certification. If the Mental Deficiency Act is a bad one, let it be repealed or amended. Meanwhile let us have fair play for the authorities who endeavour scrupulously to obey it in the interests of the patients themselves.

THE PATHOGENESIS OF ŒDEMA

OPINION about the cause of œdema in nephritis, having forsaken the kidney for the plasma proteins, has lately shown signs of going back to the kidney, and now hovers uncertainly between the two. The renal hypotheses, which were discussed in these columns not long ago by Prof. SHAW DUNN [1] and Dr. ROBERT PLATT,[2] are somewhat involved. The theory that œdema is due to lowering of the concentration of the plasma proteins is, on the other hand, comparatively simple; it arises from a belated application of the principle, established by STARLING, that the secretion of fluid into the interstitial spaces—excess of which produces clinical œdema—is governed by the hydrostatic pressure within the blood capillaries, offset by the colloidal osmotic pressure of the plasma proteins. Pending a final explanation of œdema in nephritis—and it seems likely to incriminate both factors—it may be instructive to turn aside and consider how far lowering of the plasma proteins can be held responsible for various non-nephritic kinds of œdema, and particularly those associated with malnutrition.

Prof. W. T. LONGCOPE,[3] who has collected evidence bearing on this question, describes several cases in which œdema arising in the course of conditions like amœbic dysentery and malnutrition could be correlated with lowering of the

[1] THE LANCET, 1934, i., 1107.
[2] Ibid., 1934, i., 1257.
[3] New England Jour. Med., 1934, ccx., 1243.

level of the plasma protein, apparently from protein starvation, and corrected by promoting the normal absorption and digestion of protein. He also reminds us that the same factor can be at work in the forms of dropsy commonly found in famine areas, in prisons, and in patients suffering from severe anæmia or tuberculous enteritis with diarrhœa. He wisely points out, however, that other ætiological factors must not be ignored. The rapidity with which the plasma proteins are regenerated from the enormous reserves of the muscles is so great, and the amount of protein on which the body can contrive to maintain nitrogen equilibrium is so small, that the degree of protein starvation must be very high before œdema is likely to occur solely from this cause. In one of LONGCOPE'S cases, indeed, the protein reserves were so much depleted that during treatment the patient retained an average of 17 g. of nitrogen (that is, over 100 g. of protein) a day. It must also be remembered that BENEDICT and others have starved normal subjects of everything but water for as long as four weeks without causing visible œdema. Perhaps the most important subsidiary factor to be considered is the salt intake. Since œdema fluid always consists of salt and water in the proportions found in normal saline, dropsy cannot develop when the intake of salt is curtailed. It cannot occur, therefore, in absolute starvation. In the conditions described by LONGCOPE, on the other hand, the salt intake is either normal or excessive, and œdema becomes manifest to a degree which can be varied, within limits, in either direction, by regulating the intake of sodium chloride. Nevertheless the temporary and inconstant response of nutritional œdema to low salt diets and diuretics shows that, in the production of œdema, the salt and water intake is of much less importance than the protein starvation. Other secondary factors which must not be lost sight of are mild degrees of heart failure, anæmia, and the influence of posture. In reviewing the causes of the œdema which sometimes follows operations, C. M. JONES, F. B. EATON, and J. C. WHITE [4] put most emphasis on protein starvation, loss of protein in serous and purulent discharges, and excessive use of rectal, subcutaneous, or intravenous saline.

LONGCOPE also quotes evidence to suggest that the œdema observed in "acute yellow atrophy" and cirrhosis of the liver are likewise referable to lowering of the plasma protein. In cirrhosis the ascites can be reasonably explained on mechanical grounds, but the explanation of the œdema of the legs which is commonly seen has taxed the ingenuity of the theorist for years. It has variously been ascribed to nipping of the inferior vena cava by the contracting liver; to pressure of the ascitic fluid on the cava (but the œdema sometimes precedes the ascites); and—refuge of the pathogenetically destitute—to hypothetical damage of the capillary endothelium by still more hypothetical toxins. It is comforting to find a more reasonable explanation at last; but it remains, of course, to be ascertained why the plasma proteins should suffer depletion in diseases of the liver. It would be a mistake indeed to suppose that the problems of œdema, either general or special, are anything like solved. A low plasma protein is probably not responsible for the dropsy occurring in acute nephritis, in otherwise healthy adolescent girls, or during the treatment of pernicious anæmia with liver extract, of diabetic coma with insulin, and of hypothyroidism with thyroid preparations—to mention only a few examples. None the less, the recognition of the part played by protein starvation in the production of œdema in obscure nutritional disorders is of immediate practical importance in therapeutics.

[4] Arch. Internal Med., 1934, liii., 649.

THE WEEK AT BOURNEMOUTH

ASSUMING that for various reasons high summer is the most convenient season for a congress which involves prolonged indoor sessions, it would be hard to find a more delectable meeting-place than Bournemouth. The number of hotels of all grades from simple to luxurious, the proximity of spacious buildings to each other and to the sea, the amenities of the town and the beauty of the surrounding country are only some of its attractions. And when to these are added, as this year, weather which makes sea- and sun-bathing possible before 9 A.M. and after 6 P.M., it is small wonder that those attending the British Medical Association's annual meeting this year are enjoying themselves.

The agenda which faced the Representative Body when it assembled on July 20th at the Town Hall may well have alarmed the 97 new members, but the old hands were confident that Dr. E. K. le Fleming, now in his third and last year of office, as chairman, would lead them and, when necessary, drive them through it with his customary skill. And they were not disappointed, because they completed the work just in time to collect robes and walk in dignified procession to the official religious service, held at St. Peter's Church at 4.30 P.M. on July 24th. The four strenuous days had not been without their alleviations. Business was interrupted from time to time by such diversions as visits from the Mayor of Bournemouth and the president-elect of the Association, and by periodical announcements of results of elections and certain other figures—for example, 507 for 6—which bore no direct relation to the questions under discussion but caused intense interest. A pleasant interlude in connexion with the report on Overseas Branches was the appearance on the platform in succession of representatives of the divisions in places as remote as Trinidad, New Zealand, Malaya, India, Australia, Zanzibar, Mesopotamia, and Hong-Kong. All offered greetings, and some made an eager appeal for advance notice of the visit of any colleague from home, so that a gathering might be arranged to meet him and thus keep in touch with British work. Even those who greatly prefer to take their travels without thought of professional activities could hardly fail to be moved by this request.

The representatives' dinner was enlivened by the wit of Dr. J. B. Miller of Bishopbriggs, who sketched the individual characteristics of officers of the meeting with rich imagery. Later in the evening the representatives joined their ladies at a cabaret supper.

The meeting bids fair to rank as an outstandingly successful one.

ANNOTATIONS

DEATH FROM ELECTRIC SHOCK

THE risk of dying from passage of electric current through the body is numerically small; the Registrar General during the last few years records only 50 to 60 violent deaths a year from electricity (lightning excepted). It is a curious thing that in spite of the widespread use of electric current for lighting in the home and as a source of power outside, the number of fatal accidents from its use is not on the increase, a tribute no doubt chiefly to the efficacy of means taken to safeguard the current, but partly, one may hope, to increasing efficiency in dealing with accidents when they occur. One result of the fewness of such injuries and their wide distribution is that only rarely does the practitioner meet with a case of unconsciousness from electric shock. But although their number may be no more than one a week, each death is a tragedy, for the victims are mostly young men in the prime of life, and it is a fact on which too much emphasis cannot be laid that in these cases more than in any other kind of accident survival depends on prompt aid. More than twenty years ago Dr. Reginald Morton, then president of the electrotherapeutic section of the Royal Society of Medicine, wrote a letter to our columns,[1] in which he stated that with the prompt application of first aid practically every victim can be revived, and of these nearly all will make a complete and permanent recovery, provided they were previously in a normal state of health. A current of 1500 volts is not necessarily fatal; Dr. Macdonald Critchley tells the story [2] of a boy who climbed a pylon and touched a wire carrying 11,000 volts with no untoward result other than some superficial burns and transient loss of memory. More recently Dr. Blake Pritchard who enunciated [3] a new theory of lightning stroke, confirmed the observation that the survivors of electrocution rarely have any permanent damage of the nervous system. Dr. Morton affirmed two fundamental facts: the first that death from electric shock is at first only an apparent death; the second that whatever the conditions or severity of the accident there is a period varying from a few minutes upwards during which artificial respiration will resuscitate the victim. So important is it, he remarked, to commence artificial respiration quickly that it is the bystander's first duty to see to this before doing anything else; he must not even leave the victim to summon medical aid, for it might be too late to render effective help by the time the doctor arrives. Of course he should send for medical assistance if there is anyone to send. Artificial respiration may revive the victim of electric shock within a minute or two; on the other hand, it may not, and there may be a long period during which artificial respiration is continued without any apparent sign of life. A recent circular (Form 1705, November, 1933) from the Factory Department, Home Office, tells us what was actually done in 50 fatal accidents reported to the department. In 15 of these artificial respiration was carried on for an hour or longer, in some instances under medical supervision; in 10 cases for half an hour, in 8 for 15 minutes, in 2 for 10 minutes, and in 1 for 5 minutes. In 6 of the 15-minute cases it seems that the doctor who was called in pronounced life extinct at the end of that time. In 4 cases it is definitely recorded that no artificial respiration was tried. In 11 of the cases, indeed where a doctor was on the scene within a few minutes of the accident, practically no attempt was made to revive the patient. The circular is quite definite in asserting that if a doctor on his arrival finds artificial respiration being practised he should not, because the heartbeat cannot be detected, presume life to be extinct but should advocate perseverance in artificial respiration. Evidence in the hands of the department makes it all too clear that the importance of immediate application of artificial respiration in cases of apparent death from electric shock, and of persistance in applying it, although generally appreciated now by electrical engineers, is not adequately realised by factory occupiers or, the circular adds, by members of the medical profession. Both the Silvester and the Schafer methods of resuscitation are applicable, the important thing being to apply one or other of them without a moment's delay. Artificial respiration should be combined with the inhalation of oxygen carbon-dioxide mixture as in the first-aid treatment of persons overcome by gas.

[1] THE LANCET, 1912, ii., 1539.
[2] Ibid., 1934, i., 68.
[3] Ibid., 1934, i., 1163.

THE OXFORD OPHTHALMOLOGICAL CONGRESS

THE twenty-fourth annual meeting of the Oxford Ophthalmological Congress, held on July 5th–7th under the mastership of Mr. Cyril Walker, was attended by 116 members, and was distinctly overshadowed by the death on the eve of the meeting of Mr. Bernard Cridland, who had been the ideal organiser and latterly the master of many past congresses. On the first day a discussion on the functional diseases of the eye was opened by Sir Farquhar Buzzard and Mr. F. A. Williamson-Noble, the latter dwelling on the need for liaison between ophthalmology and psychiatry, a need illustrated later by Dr. William Brown from the disturbances of vision in war neurosis and the ocular symptoms in miners' nystagmus, for even in organic eye trouble the functional disturbance was often exaggerated by the mental reaction of the patient to his disability. Many members took part in the discussion which followed. In the afternoon of the same day Dr. H. W. Barber made an elaborate classification of diseases of the eyelids, their ætiology and treatment, and Mr. Tudor Thomas showed a patient on whom he had successfully performed his corneal graft operation. Later there was a garden party at Oriel College, and at the annual dinner in the evening at Keble Hall a presentation was made to Prof. Arthur Thomson in acknowledgment of his kindness in allowing the congress to hold its meetings from the start in the department of human anatomy.

Certain aspects of myopia were introduced by Dr. Thomson Henderson and Mr. Arnold Sorsby. Dr. Henderson regards myopia as a constitutional weakness, the yielding of the sclera to normal intraocular pressure being analogous to the yielding of the bones in rickets. If the constitutional weakness can be successfully combated, he said, the eyes will take care of themselves. Mr. Sorsby regards myopia not as a disease but as a normal variation in one direction, just as hypermetropia is a normal variation in the other, the refraction of the eye being the resultant not only of length of the optic axis but of other factors. Neither speaker had a good word to say for the still prevalent view that excessive convergence of the eyes causes myopia. Dr. Henderson submitted the following simple refutation of this theory: while the slightest pressure on the eyeball is enough to cause visible pulsation of the veins on

the disc no such pulsation can be detected during voluntary convergence.

The Doyne memorial lecture was given by Prof. Joseph Meller of Vienna on tuberculosis in relation to spontaneous post-traumatic and sympathetic ophthalmia. He rejected the current idea that sympathetic ophthalmia is due to a poison introduced from without, and gave reasons for his belief that it is really a manifestation of tuberculosis. His paper will appear in the *Transactions* of the Ophthalmological Society at an early date.

Among the shorter communications was a note by Dr. Oliver Pratt on the influence of diet in ophthalmic practice. Dr. Pratt finds a connexion between migraine and faulty fat metabolism, and between some forms of conjunctivitis and excessive carbohydrate consumption aggravated by lack of vitamins. Hence the value of glucose in the form of barley-sugar tablets in the one case and of halibut oil in the other. Mr. Bernard Chavasse described thermoplasty of the extra-ocular muscles; Mr. J. J. Evans and Mr. P. J. Evans dealt with congestive glaucoma, Mr. F. Ridley with the action of lysozyme, and Mr. L. H. Savin with a case of uveoparotid fever. Mrs. Lythgoe related the results of her research on the production of rosettes in the mammalian retina.

PITUITARY BASOPHILISM AND THE SUPRARENAL GLAND

THE underlying cause of the disturbance conveniently called "basophilism" is still very obscure. In the female the clinical picture is pretty clear-cut: a rapidly acquired adiposity confined to the face and trunk, striæ atrophicæ in the skin hypertrichosis, amenorrhœa, and vascular hypertension, are the common manifestations of the condition; also there may be glycosuria and evidence of osteoporosis. Cushing has emphasised the association of this syndrome with a basophil adenoma of the pituitary gland, but Leyton, Turnbull, and Bratton have described a similar syndrome in the male in two cases in which carcinoma of the thymus was revealed at necropsy [1] and the pituitary, on serial section, appeared normal. At the Mayo Clinic seven cases of the syndrome have been collected and in a recent paper Kepler and his co-workers [2] present the results of their investigation. In two examples the pituitary gland is implicated. A basophil adenoma was found at necropsy in one, and in the other patient (who is still alive) there is radiographic evidence of enlargement of the sella turcica and erosion of the posterior clinoid processes. In a third example a thymoma was revealed at necropsy, while in the remaining four cases disease of the suprarenal bodies seems to have been the cause of the disturbance. In two of the latter class the responsibility of the suprarenal is clinically proved, because the surgical removal of a large cortical tumour has been followed by a rapid and dramatic reversion to a normal clinical state; and the photographs show that these claims are by no means overstated. In view of this and of the fact that a marked hyperplasia of the suprarenal cortex has also been observed in association both with basophil adenomas of the pituitary and with three recorded examples of the syndrome in carcinoma of the thymus, the question arises whether the clinical disturbance may not be related essentially to an excess of cortical secretion. Conceivably also, as Kepler tentatively suggests, an over-activity of the suprarenal cortex may stimulate the basophil elements of the pituitary gland and so lead to the formation of an adenoma of these cells. The problem cannot easily be resolved in this way, however, because the suprarenal bodies have been recorded as normal in several cases in which a basophil adenoma has been associated with the full clinical manifestations of the syndrome. It is obvious that we are still a long way from understanding the factors at work.

A practical point emerges, however, from the above considerations. As we are unable at present to tell which of the endocrine glands should be incriminated in the presence of the syndrome there is a strong case for surgical exploration of the suprarenal bodies. If this should prove unrewarding a second line of attack lies in directing X ray treatment to the pituitary gland.

[1] Dr. O. Leyton recalled these cases, with illustrations, in his Schorstein lecture on "multiglandular disease" lately published in THE LANCET (1934, i., 1221).

[2] Kepler, E. J., Kennedy, R. J. L., Davis, A. C., Walters, W., and Wilder, R. M.: Proc. Staff Meet., Mayo Clinic, 1934, ix., 169.

ECONOMICAL BUYING BY HOSPITALS

AT the end of 1931 the Public Health Congress appointed a committee to inquire into the possibilities of standardising hospital equipment.[1] The information on which it bases the report just issued was obtained from a questionnaire sent to nineteen representative voluntary hospitals, but the committee believe that had similar inquiries been made of the local authorities, at any rate the smaller of them, the answers would have shown an almost identical state of affairs. In brief, what was found was that there are in use too many varieties of the same article, differing only in non-essentials, the prices varying widely; that there is little evidence of expert buying; and that all known methods of purchase are employed from "retail" to "direct from manufacturer." It is a natural impulse, especially on the part of small hospitals, to buy locally and in relatively small quantities, and, on the whole, the smaller the hospital the higher the price it pays for certain commodities. This is especially noticeable in surgical materials—one hospital will sometimes pay more than double the figure charged to another. Bedsteads vary from £2 2*s*. 6*d*. to £4 15*s*. 6*d*., each equally suitable; bedside lockers range from £1 5*s*. to £6. At all but one of the hospitals consulted the average price of a dressing trolley is £6 10*s*.; at the other one of the models cost £20 and another £17 18*s*. There is no standardisation in sheets, which vary from 3*s*. 3*d*. to 10*s*. 6*d*. each; pillow cases range between 7*s*. and 28*s*. the dozen. Stainless steel knives cost anything from 7*s*. 6*d*. to £1 15*s*. per dozen. One hospital actually has knives of a different finish on a hierarchical plan, running down from doctors, through nurses, ordinary patients, and private patients to domestic staff! A comparison between a large and a small general hospital showed astonishing variations, all in favour of the greater institution which bought by sample and contract, whereas the small one purchased by local tender or from manufacturers' lists. The London and the Surrey county councils provide some illuminating figures showing the difference between central and instructed buying and purchases by individual committees.

The moral of these and other figures is unmistakable. The small buyer is always at a disad-

[1] The chairman was Prof. W. W. Jameson, dean of the London School of Hygiene; Dr. T. Carnwath represented the Ministry of Health, Dr. Charles Porter the Society of Medical Officers of Health, and Mr. R. H. P. Orde the British Hospitals Association, and to them were added two technical representatives of the London County Council, a body which has already accomplished great things in the way of the simplification and standardisation.

vantage, since the retail market only is open to him, whereas centralised buying saves the retailers' and often the wholesalers' profits, since the manufacturer can sometimes sell in large bulk for a lower price than he quotes to the wholesale firm. The proof of the pudding is in the eating. The London County Council buys in bulk some surgical instruments and medical and surgical sundries at less than half of the retail price, and in every instance makes a substantial saving. These economies are due to a reduction in the number of types, which means standardisation with consequent reduction in manufacturing costs, and purchases in large quantities. Not mere cheapness is desired, but the most suitable article of standard form. The committee refuses to admit that it is necessary for a hospital to purchase locally from firms which support it. It is laid down as the duty of the buyer to purchase as cheaply and efficiently as possible, and that if he does otherwise he is failing in that duty. That this will be the view of the general public, from which the voluntary hospitals derive most of their support, there can be no doubt whatever, and the committee believes that most of the hospitals favour the idea of simplification and standardisation, "but no one appears willing to shoulder the responsibility for the preliminary steps." The subject is admittedly delicate. Many medical men fear that standardisation might "stereotype professional practice and hamper or destroy individual initiative," or that a hospital authority might cut down expenses to a point that would stifle all growth and development. The committee have seen a real danger, but believe that the width of the field should enable it to be avoided. After all, no surgeon is likely to object to his bandages, provided they are of good quality, being bought by wholesale at half the old price.

The establishment of one central buying organisation for all hospitals is considered to be out of the question at this stage by reason of the cost that would be incurred before the value of the scheme could be proved. Much, however, could be done gradually and without delay by the grouping of hospitals with a view to simplification and profitable coöperation in purchasing. Meanwhile it is recognised that there is need for "a central bureau where views could be exchanged, standard types exhibited, and advice given to hospital officials." These are, indeed, the objects aimed at by the medical section of British Industries House, opened last week by Lord Derby, which seeks to become "a national buying centre for hospitals and the medical profession." Much may, perhaps, depend upon the development of this enterprise.

THE CONJUNCTIVAL CIRCULATION

Mr. Basil Graves's slit-lamp study [1] of the minute anatomy of the conjunctival vessels is the fruit of laborious years. In many persons, he finds, distinct vessels can easily be seen running more or less radially and conveying blood centrifugally towards the limbus where they turn deep in an arched course and join the episcleral vessels at the base of the limbus net or even the loops of the net itself. Accompanying many of these conjunctival vessels in which the direction of the blood stream is towards the limbus, are vessels so minute that they can easily be overlooked, in which the blood flows in the other direction, away from the limbus, and these two vessels form a loop somewhere between the limbus and the fornix. Similarly looped pairs of vessels arise from the fornix and proceed towards the region midway between fornix and limbus, where there is a fine anastomosis. Other shorter ones are in the limbus plexus itself. In one type a single relatively large vessel along the corneal border of the plexus conveys blood in one direction concentric with the limbus. On each side of the vessel there may be loops, but in normal conditions they are empty of blood, filling up readily under any circumstances which increase the superficial vascularity of the eye. At first sight the appearance of the vascular plexus at the limbus is that it is venous. Mr. Graves suggests that the efferent components of these conjunctival loops, where the rate of flow is slow, have become specialised to facilitate oxygenation of the blood and that they function as capillaries. Drawings made from actual cases illustrate the complicated connexions of the vessels.

The clinical bearing of these minute observations is not immediately apparent, but they are obviously related to the nutrition of the cornea. The paper will be a firm basis for future workers on this subject.

[1] Brit. Jour. Ophthalmol., June and July, 1934.

"SPINAL ANALGESIA IN FACT AND FANCY"

NOBODY conversant with the facts has any doubt of the great value of spinal injections for analgesia. This value, however, is often obscured by failures with the method, and still more perhaps by explanations of the failures. The fact is that most failures are not to be attributed to the method but to the way in which it is employed. The same is largely true of fatalities that occur from spinal injections, and Dr. W. W. Babcock,[1] whose experience is almost unrivalled, puts the matter correctly as well as tersely when he writes: "After a death from spinal anæsthesia the anæsthetist may often properly write his own name in the space on the certificate reserved for 'cause of death.'" Babcock's article, though chiefly one of destructive criticism, is a useful addition to what has been written about spinal analgesia. It shows plainly the faultiness of much which is often accepted as true principle on which to employ the method, and it shows also, what cannot be too firmly or too constantly grasped, that success and safety depend on attention to details of technique. There is no need for great elaboration or for much use of adjuvant drugs. The anæsthetist who applies the lessons of physiology and anatomy with care and with common sense can hope for success as little tinged with anxiety as that which follows the practice of Dr. Babcock himself.

CO-OPERATION IN MEDICAL EDUCATION

IT is a fact of public importance that the Governing Bodies of St. Bartholomew's Hospital Medical College St. Thomas's Hospital Medical School and Guy's Hospital Medical School have decided to establish a closer co-operation for the advancement of medical education. We have received the following from the Deans of these three important medical schools.

"The medical schools of London have grown rapidly during the last century and a half. They originated in a system of apprenticeship, under which the students became attached to individual members of the staffs of the various hospitals. Later this system was terminated and organised schools were established. Early in the present century these schools became constituent colleges of the University of London.

The range of medical education has now become so wide and the subjects included in the training of a doctor so complex that the problems of the teachers

[1] Surg., Gyn., and Obst., July, 1934, p. 94.

are becoming more and more difficult. It is to meet this difficulty that the co-operation between the three schools mentioned has come about. The first steps must necessarily be slow. An Executive Council has been formed, consisting of the Dean and four other members of the teaching staff of each school. Meetings, at which subjects of educational importance will be discussed, will be held throughout the year. The decisions reached will be referred to each school for consideration and such action as may be agreed. In order that the co-operation may be as close as possible the Dean of each school will be invited to attend the Council Meetings of the other two schools, when subjects of general interest are being reviewed.

A further step has been taken. Certain courses of study are being organised for which it is difficult to cater in an individual school, but which can be arranged without difficulty when the students of more than one school will benefit. Further, the students of each school will be permitted, under an arranged scheme, to avail themselves of the clinical facilities of the other schools. In order to allow the scheme to develop gradually, in some instances the arrangements for an interchange of clinical teaching will be restricted for an initial period to St. Bartholomew's and St. Thomas's. When, after some preliminary experience, the organisation has become stabilised, similar facilities will be extended to students of Guy's.

It is hoped that co-operation on these lines will be of great value to the cause of medical education, and it is felt that the wider outlook thus made possible for the students must be of real benefit to them.

BRITAIN AND DANGEROUS DRUGS

THE report for the year 1933 on opium and other dangerous drugs furnished to the League of Nations on behalf of His Majesty's Government is both interesting and reassuring. By new regulations and an order in Council under the Dangerous Drugs Acts (1920–1932), codeine and dionin are now brought under control as regards their manufacture and distribution in this country, as well as their import and export. The assurance is again repeated that "drug addiction is not prevalent in Great Britain," and no raw opium, coca leaves, or Indian hemp are produced in these islands. Five firms—three in London, one in Liverpool and one in Edinburgh—are licensed for the manufacture of medicinal opium, two are licensed to produce morphine and one to manufacture cocaine and its salts. The gross amount of morphine (alkaloid) made in 1933 was 30,757 oz., and of morphine salts 44,169 oz. Illicit traffic in narcotics, which has flourished in certain parts of the Continent, in the Levant and in the Far East, is said to be almost non-existent in Great Britain. No important seizures were made during 1933, "nor are there any indications of illicit traffic on any appreciable scale or of the organisation of illicit traffic in Great Britain." A Spanish subject, on arriving at Southampton from Havre, was found to be in possession of 140 lb. of opium, obtained apparently from a well-known trafficker in narcotics in Hamburg, who had fled thither when released on bail in America. He, according to the latest reports, was awaiting trial in Hamburg in connection with traffic in narcotics and other charges. The amount of codeine manufactured in Great Britain in 1933 was 35,890 oz. and 23,366 oz. were exported direct by the manufacturers. There were, during the year, 55 prosecutions under the Dangerous Drugs Acts, and in all but four cases fines from £5 to £100 were inflicted, and in 14 cases imprisonment of from one to 12 months was ordered. The total importation of raw opium in 1933 amounted to 129,635 lb., the bulk of it being of Turkish origin; of coca leaves 112,509 lb. were imported, mainly from the Netherland East Indies. The total exports of morphine and its salts were 16,156 oz. or 44 oz. less than in 1932.

KEITH LUCAS

GREATNESS is a quality difficult to define without the use of negatives. It is not synonymous with brilliance nor with a distinguished career; simplicity is its keynote, and simplicity as a positive attribute is given to few. The little collection of tributes to the memory of Keith Lucas, recently published,[1] reveals this as his outstanding characteristic. In such widely different spheres as home, school, scientific exploration, physiological research, aeronautical investigation, and military life we see it emerge unfailingly. Difficulties, mechanical, biological, and human, seem to dissolve at his touch, and the courage of his convictions is ever present. Although physiology cannot claim all the fruits of his labours, its debt to him is profound—not only for his characteristically fundamental contributions to its knowledge, but for his spirit and influence. If any proof of this were necessary, the very publication of this volume at the present time would be sufficient. The cynically minded might say that 18 years after his death is a most unpropitious moment for producing biographical notes of any man, but in this case they would be wrong. The papers have been written by several persons, each of whom knew him for some period of his life, and their story is told with a simple unemotional directness whose object is not to make a hero, but to pass on to those whom the war deprived of Lucas's acquaintance something of his fearless insight and generous spirit. To the late Sir Walter Fletcher we owe the conception of this memoir, most of the material for which he himself had collected, and there can be little doubt that the completion of none of his unfinished tasks would have given him greater pleasure than this.

SULPHUR IN RHEUMATOID ARTHRITIS

SULPHUR metabolism in arthritis was the subject of two communications to the international congress on rheumatism, recently held at Aix-les-Bains (see THE LANCET, July 14th, p. 111). Prof. M. Loeper and his co-workers, who have estimated the sulphur content of synovial fluid, cartilage, and blood, reported a deficiency in the joint tissues, with an excess of total sulphur and of glutathione in the blood. Dr. A. R. Neligan described a study made with H. B. Salt at the Royal Brine Baths Clinic, Droitwich, of the essential sulphur-containing amino-acid cystine in the finger-nails in arthritis. M. X. Sullivan and W. C. Hess,[2] of Washington, have observed a decrease in arthritis in general, and the Droitwich workers, using the same methods but studying cases of rheumatoid arthritis only, found an even more marked difference. For normal persons the average was 12·12 per cent.; for rheumatoid arthritis it was 7·78 per cent., and 75 per cent. of the rheumatoid cases were below the average normal figure. They also examined cases of non-rheumatic chronic disease and found that the nail cystine was low in them too (average 8·91 per cent.). They suggest that if the physiological importance of an organ may be judged by its sulphur content, the cutaneous system ranks higher than all, and ask whether it acts merely as a reservoir or has a more active rôle. The importance

[1] Keith Lucas. Cambridge: W. Heffer and Sons, Ltd. 1934. Pp. 131. 5s.
[2] Jour. Bone and Joint Surg., 1934, xvi., 185.

of the skin in rheumatic conditions is recognised; but the decrease of nail cystine appears to be a concomitant of chronic illness in general, and not of arthritis in particular. Nevertheless, the closer study of sulphur metabolism in chronic disease may help to a better understanding of its ætiology and of why sulphur does good in some forms of rheumatism.

THE DECLINE OF THE FLEA

THE numbers of all animals are subject from time to time to wide fluctuations, due sometimes to causes that are well understood, sometimes to factors that are quite obscure. A few years ago certain German newspapers announced that the human flea was extinct; and although this claim was promptly negatived by the offer of large numbers of highly priced fleas to the curators of museums, there can be little doubt that in recent years the human flea population has fallen. Fleas are less in evidence to the ordinary observer; they are more difficult to obtain for zoological laboratories; and the managers of performing fleas, who ordinarily draw their supplies from the poorer sorts of lodging-houses, in spite of paying as much as half a crown a dozen for "good bold fleas," have been hard put to it to recruit their circuses. The reasons for this decrease are not altogether clear, but there seems to be no ground for the belief that it is the result of some epizoötic disease of the flea. Some German authors have credited the change to the altered habits of dress among women; notably the disappearance of heavy woollen clothing and stockings in which fleas were formerly wont to hide. The flea, of course, is far more readily discouraged by general domestic cleanliness than is its fellow the bug; and any improvement in this direction will be at once reflected in the flea population. Then the early stages of the flea are ill-adapted to withstand desiccation; it is well known that in many parts of the tropics and sub-tropics the disappearance of bubonic plague during the hot, dry season is brought about by the fall in the rat-flea population; and it is not inconceivable that the climate of the last two summers may have proved inimical to the human flea. Probably all these and other factors have been concerned. Certainly the flea population seems to be less than it was; and those who require the human flea in quantity can often obtain it most readily, sometimes indeed in enormous numbers, from pigsties. For, like many of his other parasites, man shares his flea with the domestic pig.

PHARMACOPŒIAS PRESENT AND TO COME

FOR the second year in succession Dr. C. H. Hampshire presided over the British Pharmaceutical Conference, which met at Leeds last week. He is the secretary of the Pharmacopœia Commission, and this may be partly the reason why so many of the contributions were closely concerned with progress in the science on which pharmacy rests. The theme of his own address was pharmacopœias—British and foreign, old and modern. Beginning with the first, issued in 1618, he showed how stage by stage changes were introduced until there emerged a work which has little or no resemblance to that produced by the Royal College of Physicians of London more than three hundred years ago. We now have a book of standards instead of a catalogue of drugs and a multitude of prescriptions. Little of Dr. Hampshire's address, however, was devoted to ancient history. Turning to our own times he recalled that since 1928 seven national pharmacopœias, besides our own, have been published, three of them (the Italian, Belgian and Spanish) before the British, and four (the Danish, Swiss, Yugoslavian and Hungarian) after it. The Spanish pharmacopœia, he said, is one of the most satisfying and instructive of the modern pharmacopœias and in close relation to medical advances; the Swiss book is of great value from the pharmaceutical point of view; the Yugoslavian official volume shows the same infusion of the modern spirit, as also does the Hungarian. The Italian pharmacopœia does not include physiological methods of assay, but like the Belgian and Spanish volumes, contains a much larger number of monographs than the British. The Danish book is distinctly a pharmaceutical pharmacopœia with a preference for formulas; organotherapeutic remedies and organic arsenical compounds are not included, the reason given for the omission being that the methods of preparation and standardisation of these drugs are rapidly developing and the requirements of the pharmacopœia are intended to apply over a number of years.

There is a pharmacopœia which many besides Dr. Hampshire would like to see—an international pharmacopœia. Such an undertaking has long been projected, but an impasse seems to have been reached. The desire is as keen as ever for the unification of the standards for drugs and of the strengths and formulas of preparations through a universal volume. Differences in national standards for widely used medicinal substances are a hindrance to the spread of medical knowledge and a bugbear to pharmacists who have to dispense prescriptions brought by travellers from various countries. An international pharmacopœia would remove those difficulties, and it is to be hoped that some day Dr. Hampshire will himself have the pleasure of presenting it to the British Pharmaceutical Conference as an accomplished fact.

THE ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

THE new building of the Royal Australasian College of Surgeons will be opened in Melbourne by the President of the Royal College of Surgeons of England, Sir Holburt Waring, on Monday, March 4th, 1935, and it is anticipated that a number of distinguished surgeons from England and Canada will attend this meeting, amongst whom are included Dean Lewis, D. C. Balfour, Prof. C. F. Saint, Sir William I. de Courcy Wheeler. Sir D'Arcy Power, and Pref. Edward Archibald, of Montreal, are also expected to be present. It was originally intended to hold the annual general meeting of the College at the same time as the opening ceremony, coincidental with the British Medical Association meeting in Melbourne, but this arrangement unfortunately could not be effected.

On Wednesday of last week, at a graduation ceremonial held in the McEwan Hall, Edinburgh, the Cameron prize in practical therapeutics was presented to Sir Edward Sharpey Schafer.

Lord Woolavington has given £10,000 towards the cost of establishing pay-beds, for patients of moderate means, at the London Hospital. He is also the donor of the Woolavington wing for paying patients at the Middlesex Hospital, to which he has made many large gifts.

INDEX TO "THE LANCET," VOL. I., 1934.

THE Index and Title-page to Vol. I., 1934, which was completed with the issue of June 30th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XII.—PERFORATING INJURIES OF THE EYE *

A PERFORATING injury of the eye may be caused either by a sharp instrument penetrating the wall of the globe in some position, but without being retained, or by a smaller agent (foreign body—e.g., iron, steel, copper, glass fragment) which, passing with force through the wall, is retained in the eye or may indeed pass completely through the globe and come to lie behind it in the orbit. In considering prognosis it is better to take these two types of injury separately, although there are certainly two main factors which govern both. The first of these is the severity of the injury, for in either type this may be so severe that it is apparent to the least experienced observer that the eye is irretrievably damaged and should be either enucleated or perhaps eviscerated at once. When the injury is less severe and there is a reasonable prospect of the eye being saved, the second main factor is the occurrence of sepsis.

The severe injury necessitating immediate removal of the eye is relatively uncommon, certainly as compared with the occurrence of sepsis in the less severe cases, but these two causes together constitute the chief determining factors in the loss of a wounded eye. There do not appear to be any statistics available which show the proportion of eyes so lost, except in the cases where a foreign body has been retained in the globe. I have found that practically two out of every five eyes injured in this way require enucleation; the actual figures being 424 enucleations in 1117 cases of intra-ocular foreign body under different observers. It is more than likely that this estimate is applicable to both types of penetrating injury.

Sepsis.—When sepsis occurs early and is acute panophthalmitis develops and there is no question as to the fate of the eye—namely, enucleation—but when the sepsis is of a low grade type coming on late, a week or much longer after the injury, or even years after, from late infection of the scar, much anxiety may be felt as to whether it is safe to advise retention of such an eye. As a rule an eye which shows uveitis following the trauma goes steadily downhill with gradual loss of vision and atrophy of the globe, and the patient will be saved much suffering if enucleation is performed early. When this has been postponed for some time, say two or three months, in the hope that the eye may recover, there is often headache long after the eye has been removed. This should be borne in mind in cases under the Workmen's Compensation Act, where for months after the removal of the injured eye the patient may say he is unable to work on account of headache, the existence of which it is difficult to prove or disprove. Since, however, cases in which enucleation has been performed early are rarely followed by headache, the complaint is probably genuine and is attributable to ciliary neuritis.

Sympathetic ophthalmia.—The chief danger, however, in keeping such an infected eye lies in the possibility of the development of sympathetic ophthalmia, and this is in contradistinction to the cases of panophthalmitis where the occurrence of sympathetic trouble is very rare. The site of the wound in the eye and the age of the patient are both factors which must be taken into account, especially the former. For example, it has long been recognised that the most dangerous site for a wound is the ciliary region and its immediate neighbourhood; but, on the other hand, an eye wounded in any position must, if irido-cyclitis has set in, be regarded as suspect and may be followed by sympathetic trouble in the other eye. The force of this will be better recognised when it is remembered that sympathetic ophthalmitis may be the sequela of either a cataract extraction or a hypopyon ulcer of the cornea. The shortest recorded interval between the injury and the onset of sympathetic ophthalmia is ten days and the longest about 48 years, so that the patient with a suspect eye, though he may feel that its retention is a clever piece of conservative work, is actually exposed to the risk of trouble for the rest of his life. The age of the patient is of importance, for children and young people are more prone to develop sympathetic ophthalmia than adults.

Should sympathetic ophthalmitis set in, what is the outlook for the patient? A good idea of the answer to this question can be gathered from the general agreement that it is wiser, once sympathetic trouble has started, not to enucleate the exciting eye, since this may prove in the end to be the only one in which any sight is retained. Although there are records of cases in which useful sight has been restored by various methods of treatment, the prognosis is definitely bad; and the disaster is the more deplorable when it is realised that had enucleation of the exciting eye been performed sufficiently early—i.e., within two weeks of the accident—it would never have occurred.

To sum up the foregoing one may say that the outlook for an eye that has received a perforating injury, either with or without retention of a foreign body, but followed by uveitis, is bad for the eye itself; and it is moreover a source of danger to its fellow, especially if the wound is in the ciliary region and the patient is young.

THE OUTLOOK WHEN NO FOREIGN BODY IS PRESENT

In the absence of sepsis where no foreign body is present in the globe the future of the eye depends largely on the site of the wound, and, broadly speaking, when the injury is confined to the anterior portion of the eye and concerns only the structures which lie in front of the hyaloid membrane, the ultimate outlook for the eye, both as regards vision and retention, is better than if the vitreous has been damaged.

Taking the various structures which may be wounded separately we have:—

The cornea.—Here prognosis depends entirely on the site and size of the injury; a small perforation with little or no destruction of tissue heals rapidly, and if situated away from the centre of the cornea vision is not interfered with. If the wound is larger, the iris may adhere to the posterior lips of the wound or prolapse through it, a condition which if not dealt with will jeopardise the future of the eye. When there is much destruction of corneal tissue a staphylomatous condition of the cornea may follow, leading later to loss of the eye. Reduction of vision in corneal injuries depends upon the density of the scar and its position—i.e., if in the central part of the cornea.

The iris.—A wound of the iris, per se and without complications, is not a serious matter, vision not being materially affected, but, as just stated, there may be adherence of the iris to the corneal wound which is inevitably present or a prolapse of this structure through it, and if this is not dealt with the eye may remain irritable for a long time or late infection may occur leading to ultimate loss of the eye.

The lens.—A wound of the lens almost invariably means a traumatic cataract; occasionally the capsular opening will close over and beyond a small opacity in the immediate neighbourhood nothing further will happen, but as a rule complete opacification occurs. In a young person absorption of the lens matter takes place without complications,

* This article was received on June 27th, only two days before the author's untimely death.

but in older people an increase of tension is liable to supervene, necessitating surgical assistance; but provided this is well carried out no detriment follows. The outlook for the aphakic eye itself is by no means bad, for with a suitable correcting lens good vision may result, but its owner will have lost binocular vision, and is in the position of a one-eyed man, with one important and favourable difference: he retains a potential eye to be brought into action should anything happen to the good uninjured eye; moreover, the aphakic eye is of some value in seeing objects on its own side, although even dimly.

In one of my cases it was thought worth while to extract a traumatic cataract in an eye injured many years previously; the patient was a stud-groom and expressed himself delighted with the result, for, he said, "I can now see my led horse," although the correcting lens was worn.

The sclera.—Wounds of this structure are so frequently associated with injury to the ciliary body or choroid, together with the retina and more or less loss of the vitreous, that all these structures may be taken together and grouped as forming the injuries of the posterior chamber of the eye.

It is here more than probable that loss or disturbance of vitreous is the chief factor in determining the future outlook for the eye; it has been estimated on good authority that if one-fifth of the vitreous is lost no vision may be expected. Even if little or no loss takes place there will be scarring of the vitreous, which tends to lead later to retinal detachment and corresponding destruction of vision. Further, it can be easily understood that if vitreous loss occurs the retina and choroid are wounded and tend to atrophy later, with corresponding loss of field vision.

Speaking generally, one may say that some deterioration of vision, either central or peripheral or both, is the inevitable sequela of any perforating injury of the posterior chamber of the eye, and that it is greater or less according to the severity of the injury.

THE OUTLOOK IN THE PRESENCE OF A FOREIGN BODY

When a foreign body has penetrated and remains in the eye, the *site* of the foreign body is the most important factor in the prognosis.

If it lies *in the anterior portion of the globe*—i.e., in any part anterior to the hyaloid membrane but excluding the ciliary body—extraction is a comparatively simple matter and good results follow, even though the iris may be injured. The lens may, of course, be concerned and a traumatic cataract may follow, but this, if dealt with satisfactorily, should only mean an aphakic eye. Speaking generally, the outlook for an eye in which a foreign body has come to rest in its anterior portion is distinctly good, provided appropriate surgical measures have been carried out.

It is otherwise, however, when a foreign body has penetrated deeper and lies *in the vitreous* or against or even impacted *in the posterior wall of the globe*, and it is unfortunate for the patient that this is the commonest site for the foreign body to take up.

I have found and noted in the Transactions of the Ophthalmological Society of the United Kingdom (liii., p. 438), that in 374 out of 656 cases recorded by observers in this and other countries the foreign body lay in the vitreous—i.e., 57·7 per cent., and, further, that the percentage of enucleations in vitreous cases was 45·9. This appears to suggest that when a foreign body lies in its most favourite site in the globe, nearly half the cases come to enucleation. What is the outlook for the remaining 54·1 per cent. of cases where the eye has been "saved"? In a number of them the results may seem to be very satisfactory at first, to the gratification of both patient and surgeon, but as time goes on this number diminishes, and the end-results seen years after the original injury are distinctly disappointing.

With a view to ultimate prognosis in cases of this kind—i.e., foreign bodies in the vitreous or impacted in the posterior wall of the globe—I collected last year from the literature of this and other countries, in addition to those under my own observation, 88 cases which had been re-examined more than five years after the original injury.

In all these cases the foreign body was iron or steel and therefore responsive in most instances to the giant magnet.

Considering the importance of the subject, at least in industrial districts, together with the wide range of literature examined, the number under review may seem small as a basis for definite conclusions. Records of late examinations are, however, scanty, and only those cases were included of which full and reliable information had been available. Of the 88 cases, many of which had been re-examined at periods considerably longer than 5 years, even up to 21 years, 19 were examples of retained foreign body impacted in the wall of the globe, whilst 69 were examples in which the foreign body had been successfully removed. The visual results were classified in three grades as follows: (1) useless eyes—i.e., eyes rendered blind or with vision not better than 3/60; (2) useful eyes—vision from 3/60 to 6/12; (3) good eyes—vision from 6/9 to 6/6 or better, with results as follows:—

Eyes.	Impacted cases (19).	Successful removals (69).
	Number and percentage.	
Useless	11 (58·5)	41 (59·4)
Useful	6 (31·5)	18 (26·0)
Good	2 (10·5)	10 (14·4)

From these figures it will be seen that the chances of an eye being blind in impacted cases where the foreign body is left in situ as compared with its removal are about equal; that there is a rather better chance of a useful eye being retained in impaction than if the foreign body is extracted; but that the chance of obtaining a good eye is nearly 3 to 2 if the foreign body is removed.

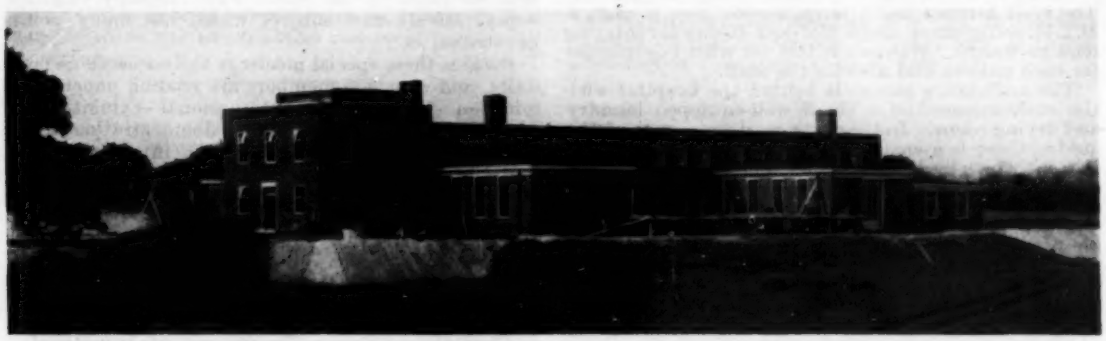
It must be remembered that *siderosis* may have to be reckoned with when the foreign body is retained and cannot be removed except at the cost of considerable damage to the eye; but siderosis, though causing grave disturbance in an eye, does not always mean its loss. An eye may show marked signs of this interesting condition and yet after removal of the foreign body may prove a useful organ and cause no further trouble. If the foreign body cannot be removed, but is small, it may become absorbed and the signs of siderosis gradually subside. The prognosis in cases where the retained foreign body is copper or brass is not good for the eye. It may be possible to extract from the anterior portion of the globe a fragment of this nature, but it is practically impossible to rescue it from the posterior chamber.

Cases are on record where copper has been retained in the globe for years, but usually owing to chemical changes taking place the condition known as *chalcosis* is set up, just as is siderosis in the case of iron fragments, and the eye comes to enucleation.

Fragments of glass or stone may be retained in the eye for many years without causing trouble, for chemical changes are not set up by their presence. The outlook, however, cannot be said to be favourable, especially when the site of retention is in the posterior chamber of the globe.

A. BERNARD CRIDLAND, F.R.C.S., D.O.,
Senior Hon. Surgeon, Wolverhampton and Midland Counties Eye Infirmary.

SPECIAL ARTICLES



THE NEW HOSPITAL AT WELWYN, JUST BEFORE COMPLETION

A LARGE COTTAGE HOSPITAL

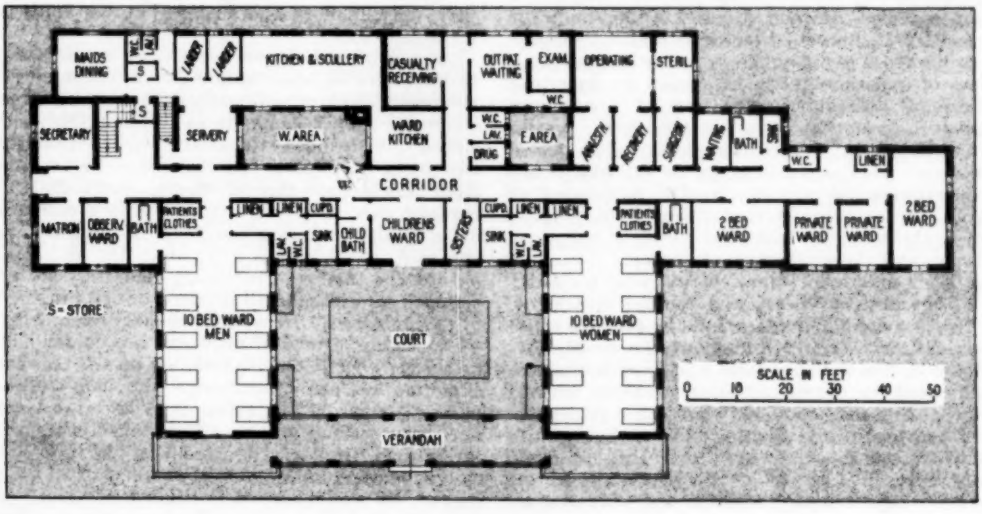
On July 24th the Duchess of York opened the new buildings of the Queen Victoria Memorial Hospital at Welwyn, Herts. The hospital was founded in 1902 with four beds and until the present time has been housed in the original building on the main Hitchin–Welwyn road, to which additions were made from time to time. The population of the district is increasing and it was being found that 12 beds were insufficient for its needs, when a bequest of £25,000 in the will of the late Sir Otto Beit enabled the committee to acquire a site of about five acres and erect a new hospital. The site is admirably adapted to its purpose, standing just outside Welwyn, high on a southern slope above a quiet lane and with wide views towards the west, east, and south. The design is by Mr. H. G. Cherry, F.R.I.B.A., working in close coöperation with Messrs. Adams, Holden and Pearson as consulting architects.

The building erected provides for 30 beds. The elevations are horizontal in character with a flat roof, and the windows, which are of metal in wood frames, have horizontal bars. It is faced in red bricks from Daneshill with dark purple quoins to window and door openings.

The main entrance, with hall and staircase to the first floor, is at the west end and is approached by a curved drive up from the road. The main corridor runs approximately east and west with a duct beneath it for pipe runs. On the northern side of the corridor are the kitchen and servants' quarters with a tradesmen's entrance in the rear the out-patients' and casualty department, and the operating suite, which is equipped with Messrs. James Slater's electric sterilisers and one gas-heated dressing steriliser. At the eastern end of the corridor a swing door leads through to the private patients' wing containing two single and two 2-bed wards. South of the corridor are two projecting 10-bed wards, one for men and one for women with a small ward for children in the centre. Large french windows at the end of each lead to the loggia for the use of patients which forms the southern boundary of the paved garden lying between the wards. The sluice-rooms and bathrooms are planned at the corridor end of the wards with direct access through a ventilated lobby.

On the first floor are a small flat for the use of the matron, the nurses' sitting-room, dining-room, and 12 nurses' bedrooms fitted with hot and cold water and so placed that they are not directly over the wards. Half-way down the corridor are a group of bathrooms and the servants' wing which is equipped with bathroom and lavatory; at the far end are quarters for night nurses, shut off by a door to ensure quiet.

The floors in the wards are of Rhodesian teak, and



PLAN OF THE GROUND FLOOR

those in the nurses' bedrooms and the sitting rooms are of jarrah. The furniture throughout the hospital is mostly of limed oak of pleasant design and colour. The tiled kitchen has a large double Esse cooker, a B.T.H. refrigerator, and a Hot-lock trolley for carrying food to wards. Wireless is laid on with headphones for each patient and also for the staff.

The ambulance garage is behind the hospital with the store rooms and a small, well-equipped laundry and drying room. In the north-western corner of the garden there is a small mortuary with a central door in front which leads into the mortuary chapel. At the side of the buildings are doors leading to the post-mortem and store room.

There is no X ray department in the hospital; an arrangement is being made with the Portable X-Rays Ltd., Chiswick, for regular service as well as emergency work.

The honorary medical staff of the hospital consists of eight local practitioners and six London specialists, also a dental surgeon and a masseuse.

INTERNATIONAL RADIOLOGY

THE fourth International Congress of Radiology, now in progress at Zurich and St. Moritz, has an interesting and comprehensive programme. The president is Prof. H. R. Schinz, and the delegates come from 30 nations. At the opening meeting on Wednesday of this week, Prof. Gösta Forssell speaks on Principles in the Fight against Cancer, and representatives of the various nations report on the organisation of the campaign in their own countries. Thereafter, every day, there are two "general reports" on special subjects, while six sections meet to discuss such different subjects as radiographic technique, the use of the cinematograph in rontgen diagnosis, radiotherapy at 700 kilovolts, and the action of ultra-short Hertzian waves.

Prof. Kienbock, of Vienna, opens the discussion on the diagnosis of tumours of bone, and Prof. Herrnheiser of Prague that on radiodiagnosis of pulmonary tuberculosis. Therapy is particularly well represented, the subjects for discussion being the radiation treatment of cancer of the uterus, and of malignant tumours of the mouth and pharynx. The openers are Dr. A. Lacassagne of Paris and Prof. F. Perussia of Milan, and among those taking part are such well-known men as Prof. Regaud, director of the Fondation Curie, and Dr. E. Berven, director of Radiumhemmet. A new subject to many members is "radiation genetics," a subject of experimental investigation by American and German observers: Mutation of genes and chromosome rearrangement can be produced by radiation, and these may result in hereditary diminution of fertility. Also stimulating in its outlook is the paper on mitogenetic radiation by Dr. S. Salkind of Leningrad, who believes that there is a definite relationship between the biological effects of this form of radiation and the production of cancer.

From a discussion of identical physical measurements of the dose in X ray and radium treatment, it is hoped that definite guidance will be given to those engaged in such therapy throughout the world. At the third congress held in Paris a special committee was appointed to investigate this problem and to report to this meeting, and all who realise its fundamental importance are awaiting the verdict of the distinguished workers led by Prof. Holthusen of Hamburg. Dr. R. Sievert of Stockholm speaks on hard gamma rays, cosmic radiation and earth radiation, and a paper in this discussion will be given by Prof. Piccard of Brussels, famous for his stratosphere ascent, who takes for his subject the method of investigating radiations at a great height. The last general paper is on short wave therapy, another comparatively new subject which has many points of interest.

Besides these special meetings the six sections meet daily, and over 400 members are reading papers. In addition there is an international exhibition of apparatus, one of books, and a demonstration of the application of radiology to the investigation of materials and paintings. The opportunity of seeing the latest apparatus of European and American firms will be very welcome.

MEDICINE AND THE LAW

Christian Science Treatment of Intestinal Obstruction

THERE is seldom anything fresh to record at inquests upon the death of persons who have undergone treatment by Christian Science practitioners. Anyone who has attained years of discretion is perfectly entitled to call in any kind of assistance when he is sick, or no assistance at all. Where the patient is too young to look after himself, Section 1 of the Children and Young Persons Act (replacing Section 12 of the Children Act of 1908) makes it possible to punish the neglect of parents or guardians who omit to obtain necessary medical or surgical treatment. Otherwise, there is no law which compels the calling in of a doctor. Where a Christian Scientist has met his death, the coroner can ascertain the fact that proper medical or surgical treatment would have averted death. The coroner may or may not advise the jury to send for trial practitioners whose treatment appears to have accelerated or assured a fatal result. If he knows that no jury at assizes would find such practitioners guilty of manslaughter there is no point in his encouraging a coroner's jury to pronounce the verdict which will commit the practitioners for trial. The coroner is concerned to ascertain the cause of death not the religious convictions of the deceased. If the dead man and his family, believing that more things are wrought by prayer than this world dreams of, have relied on that belief to the exclusion of human aid and of accumulated knowledge, then the coroner and his jury may deplore the result but can only record what they find.

At a Southport inquest last week a man was found to have died of heart failure due to chronic toxæmia, the result of chronic intestinal obstruction caused by stricture. He became ill at Whitsuntide and consulted four women Christian Science practitioners, two from Southport, one from Manchester, and one from Rochdale. One of these, questioned by the coroner, said that prayer might cure a man who fell off a ladder and smashed both his thighs; prayer, she said, could cure a stricture. Dr. W. E. Cooke, pathologist to Wigan Infirmary, definitely stated that the lack of medical skill resulted directly in the death of the deceased. He would probably have been cured up to within a week of his death if a doctor had been called in. Dr. Cooke commented on the fact that the Christian Science practitioner who had allowed the patient's condition to continue to its fatal conclusion had been trained as a qualified nurse. The coroner, Sir Samuel Brighouse, trusted that the inquiry would convey to the public the mistaken nature of the treatment. He was saddened to think that his fellow-men believed that if someone broke a leg at Ormskirk someone in Southport could pray for him and thereby

cure him. The jury expressed disgust and censure at the treatment of the deceased. The coroner observed that he would have advised them to send the Christian Science practitioners for trial if he had thought there was the slightest chance of their being convicted.

IRELAND

(FROM OUR OWN CORRESPONDENT)

A CLEAN MILK BILL

THE long-expected Clean Milk Bill was introduced in the Dáil last week and has now been circulated. Without imposing any harsh restrictions on those engaged in the milk trade it appears to make provision for a fairly satisfactory control as far as the public health is concerned. The Minister is given power to prescribe by regulations the designations which may be used for milk sold or exposed for sale, and such prescribed designations shall be known as "special designations." Sale of milk under special designations will be limited to persons who have been granted licences for the purpose. Part III. of the Bill deals with the prevention of disease likely to be caused by infected milk, and the following such diseases are enumerated: tuberculosis, typhoid fever, paratyphoid fever, diphtheria, membranous croup, and scarlatina, together with such other diseases as the Minister may from time to time declare by order. Fresh powers are given to medical officers of health to aid them in investigating the source of disease which may be due to milk, and to prohibit the sale of milk from a particular dairy or of milk derived from a particular animal. The powers so conferred cover the examination not only of the dairy and the milk, but also of any person engaged in the service of the dairy, or resident in the dairy, or resident in any premises where any person employed in the dairy may reside. It is made an offence to sell milk which is infected with disease, if the dairyman knew or could by the exercise of ordinary care have ascertained that such milk was infected. It is also made an offence to sell milk to which an infected person has had access. Part IV. is concerned with the sale of milk from diseased cows. It is made an offence to sell milk from cows suffering from any of the following diseased conditions: tuberculosis of the bladder, any tuberculous condition of the uterus, any form of tuberculosis in which tubercle bacilli are excreted, any septic condition of the uterus, acute mastitis, chronic mastitis, actinomycosis of the udder, anthrax, foot-and-mouth disease, suppuration of the udder, retained placenta, and every other disease which may from time to time be declared by order. Various minor provisions in the Bill deal with the control of the conditions in which milk is produced and distributed.

HONORARY DEGREES AT THE NATIONAL UNIVERSITY OF IRELAND

Honorary degrees were conferred by the National University of Ireland last week on several members of the staff of the medical faculty of University College, Dublin, and on other distinguished graduates of the University, as follows:—

M.D.—Dr. E. P. McLoughlin, professor of anatomy and dean of the faculty of medicine, U.C.D.; Dr. J. N. Meenan, professor of systematic medicine, U.C.D.; Major W. R. O'Farrell, pathologist to the Mater Misericordiæ Hospital, Dublin; Dr. T. T. O'Farrell, professor of pathology and bacteriology, U.C.D.

M.Ch.—Mr. H. S. Meade, professor of systematic surgery, U.C.D.

M.A.O.—Dr. Robert P. Farnan, professor of midwifery and gynæcology, U.C.D.

The Chancellor of the University, Mr. Eamonn de Valera, presided, and tributes were paid to the work of each of the candidates by Dr. Denis J. Coffey, president of University College, Dublin.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE VILLEJUIF CANCER INSTITUTE

THE new cancer institute which Prof. Roussy has brought into being at Villejuif in the suburbs of Paris has now been inaugurated by the President of the Republic. Roussy began this undertaking a dozen years ago on a modest and tentative scale, increasing the number of beds from 10 to 50 in the course of the first few years. Now there are some 150 beds, and the institution, which is attached to the Paris faculty of medicine, has become a model of its kind. One of Roussy's guiding principles has been the inclusion, in a single unit, of clinical services and research laboratories. On the clinical side, the 150 beds are more or less equally distributed between the three services of radium, X rays, and surgery. The medical staff on this side alone numbers about 25. On the laboratory side, there are as many as six different departments—for experimental medicine, pathological anatomy, serology and bacteriology, cytobiology (tissue culture), general chemistry, and physical chemistry. Here there is a staff of about 20.

CONTROL OF ARTIFICIAL MALARIA

The dangers of infection from patients inoculated with malaria for the treatment of general paralysis have led to the appointment of a commission which has recently presented its report to the Academy of Medicine. The gist of its recommendations is that inoculation with malaria should be permissible only in approved centres, and that these should preferably be in urban areas where skilled assistance is available. Elsewhere they should be provided with netting fine enough to keep out the anopheles. It is also recommended that psychiatrists collaborate with a biologist who will alone be responsible for the inoculation of patients and the control of the malaria thus induced. Further, no patient thus treated should be discharged or transferred to another institution until his recovery from malaria has been demonstrated by clinical, microscopic, and serological examinations. The Academy has adopted this report, whose immediate presentation to the Minister of Public Health has been urged by its authors. It may be remembered that, as early as 1929, the Academy adopted somewhat similar recommendations, and its return to the charge on the present occasion indicates the fate of its earlier proposals.

FIRST AID BY THE PARIS FIRE BRIGADE

The remarkable efficiency of the first-aid service rendered by the Paris fire brigade is largely due to the initiative and capacity of Lieut.-Colonel Cot, who, in 1926, outlined his ambitious programme in the *Archives de Médecine et de Pharmacie Militaires*. The following figures speak for themselves. In 1930 the fire brigade rendered first aid to about 100 persons. In 1931 this figure rose to 230; in 1932 to 480; and in 1933 to about 800. The rapid improvement in the proportion of cases in which first aid was successful after gas poisoning, sub-

mersion, and electrocution was still more impressive. In 1928 this proportion was 50 per cent. In 1930 it rose to 65 per cent., and in 1932 to 85 per cent. These results have been achieved by the mastery by the members of the fire brigade of the technique of first aid to the class of case they have to deal with, and by the machinery devised for bringing these experts to their field of operation as promptly as possible. There are now four mobile first-aid units attached to the fire brigade. There are also three stations where "carbogene" containers can be recharged. (Carbogene is a mixture now produced commercially consisting of 95 parts of oxygen to 5 parts of carbon dioxide.) As soon as the first-aid services of the brigade are required, someone runs to the nearest alarm box, breaks the glass, and telephones to the station of the district involved. A motor-car manned by eight men sets out promptly, its outfit including an apparatus for artificial respiration and a carbogene inhaler provided with two cylinders with a capacity of 300 litres of this mixture under a pressure of 150 kg. The first aid rendered varies, of course, with the cause of the accident (asphyxia, electrocution, &c.). The medical officer on duty promptly follows his team in another motor-car in which, in addition to the outfit already mentioned, there is a medicine chest provided with drugs, dressings, and splints. Arrived at his destination, he receives the report of the leader of his team, makes a rapid clinical examination of the patient, and sees that the treatment he receives is the best. It is the pace that saves.

MORE B C G STATISTICS

On June 5th Prof. Léon Bernard, on behalf of Dr. Guérin, presented to the Academy of Medicine statistics dealing with Mulhouse and 26 neighbouring communities in which, during 1933, 2036 infants were born. B C G was given to 1267 of them (62 per cent.). The deaths during the first year of life numbered 16 for the controls and 12 for the B C G babies, the respective death-rates being 2·15 and 0·94 per cent. In another conglomeration of 28 communities, over 80 per cent. of the 708 new-born infants—i.e., 527—were given B C G. In the first year of life there were 9 deaths among the non-vaccinated controls and 19 among the B C G babies, the death-rate for the former being 7·43 per cent. and for the latter only 3·35 per cent.

VIENNA

(FROM OUR OWN CORRESPONDENT)

JEWISH DOCTORS IN AUSTRIA

THE economic crisis, together with political unrest and the sad example set by Germany, has changed the situation of a large proportion of the medical profession in this country. Hitherto, out of about 7800 medical men and women, some 7100 have lived and worked in Vienna, with its population of 1,800,000. The peculiarity of the profession in Vienna has been that about half its members were of Jewish race or extraction, whereas in the provinces the proportion of Jewish doctors was not more than 5·8 per cent. This is explained by the fact that out of the 250,000 Jews in Austria 200,000 live in Vienna. As they have been almost debarred (not by law, but by custom) from appointments in the civil service, the municipalities, the post office and the railways—in fact, from public service—their intellectual members have had to turn to medicine, the Bar, journalism and commerce. Especially in Vienna the first two vocations have been followed chiefly by Jewish students—not to the detriment of the professions concerned. Now, since democracy has been done away with, and the racial or religious aspect has been given overwhelming importance in all affairs pertaining to economic problems—for we must clearly understand that all this political unrest is simply a matter of "give us our daily bread"—a silent, secret, but relentless battle is being waged by the circles at present ruling this country against what they call "not national people," the Jews. (Incidentally, Jews have been here in large numbers for at least 700 years.) As regards medicine, all Jews holding any appointments, even of a minor character, in the hospitals, asylums, school clinics and laboratories, are more or less gently eliminated; if their term of service expires, it is not renewed; no new appointment is given to a Jew. The same holds good in panel practice or the Krankenkassen: they are dismissed, with or without pension, as the case may be. A very serious matter is that the training of the would-be specialist, as well as of the ordinary practitioner who has not served his term, is completely at a standstill if he is a Jew. The existing regulations do not allow a doctor to settle down and practise as a recognised specialist, unless he has served at least four years in his intended branch of medicine, as "secundarius"—i.e., junior medical officer of a clinic. This is at present out of the question for Jewish doctors. Their chances of having the recognised training are simply cut off, for either they are quietly ousted from the clinics, or they are not accepted. For more than a year no Jewish doctor has obtained an appointment in the Vienna general hospitals, whilst others without any training at all—but "nationals"—have been appointed in charge of wards or as assistants. This was made manifest recently, when the famous chief of a children's hospital abruptly resigned his office. His (Jewish) assistants had been dismissed, and two others were appointed who had only passed their examinations quite recently and had no specialist knowledge at all. The professor declared himself unable to run the big children's clinic without adequate help. His protest had no effect; the responsible authorities were glad to get rid of him by these means, for he, too, was a Jew—on the verge of resignation, it is true, but still a famous man and fit for hard work. Such examples can be multiplied.

The fact is that about half the medical profession in Vienna are threatened with starvation. There will be no young specialists amongst the Jewish population. In the provinces all the Jewish doctors (they number about 200 all told) are in the same plight, and no one knows what is to be done if the present mentality of the ruling circles remains unchanged. At the same time all protests coming from the Jewish community are met with the official assertion that no antisemitism exists; it is simply that the authorities are at liberty to choose, for all sorts of work, such candidates as they think qualified best for it.

QUEEN'S INSTITUTE OF DISTRICT NURSING.—At a recent meeting of the council it was reported that 64,144 midwifery cases were attended by 1000 Queen's nurses and 2855 village nurse-midwives in England and Wales. The maternal death-rate was 2·26 per 1000, as compared with 2·1 per 1000 in 1932; the rate in outer areas was 2·3 per 1000—0·1 more than in rural districts. Statistics of the attendances of Queen's nurses on notifiable and other diseases in connexion with public health authorities showed 15,352 cases of pneumonia, 3553 of complication in relation to childbirth, and 553 of measles with pneumonia.

CORRESPONDENCE

VIRUSES IN RELATION TO THE ÆTIOLOGY OF TUMOURS

To the Editor of THE LANCET

SIR,—In writing of Dr. C. H. Andrewes's valuable contribution to this subject in the Oliver-Sharpey lectures concluded in your last issue, nothing but admiration can be expressed for his balanced and critical exposition, and particularly for the manner in which he has marshalled the salient *objections* to the virus hypothesis. On the other hand, certain observations invite obvious comment, and it is difficult for instance to grant any justification for the statement that "the size of the tumour agent is evidence in favour of its living nature."

It is natural that much significance should attach itself to the successful propagation of the Fujinami fowl myxosarcoma in adult ducks and to the transmission of the Rous sarcoma and other fowl tumours to the pheasant. While the duck may be regarded as "a species widely removed from fowls" and the pheasant as a "foreign host," it should be pointed out that transmission in these cases is nevertheless within the limits of blood relationship as judged by the quantitative precipitin reaction. In the accompanying Table data are quoted from Graham-Smith's classical researches on this subject (in Nuttall's "Blood Immunity and Blood Relationship," 1904) and it can be seen what extraordinary interest these figures possess and what light they throw on the present topic.

Quantitative Measurements with Antisera to Birds' Egg-albumin. (After Graham-Smith).

Egg-albumin tested.	Amount of precipitum.	Percentage.	
Fowl (old)	0·0159	100	Tests with anti-fowl-egg serum.
.. (fresh) ..	0·0140	88	
Silver pheasant ..	0·0075	47	
Pheasant	0·0075	47	
Duck	0·0037	23	
Duck	0·0384	100	Tests with anti-duck-egg serum.
Pheasant	0·0328	85	
Fowl	0·0234	61	
Silver pheasant ..	0·0140	36	

Furthermore, transplantability of fowl tumours to the pheasant is within the limits not only of blood-relationship but also of bastardisation. Poll's *Mischlingsstudien* included a phasianus + gallus cross, and such hybrids have been used in experimental work by Taibell (Riv. biol., 1932, xiv., 55). Again, Trofimov and Tiniyakov have recently drawn attention to the close resemblance between the chromosome-complex of *Phasianus colchicus* and that of the domestic fowl (Biol. Zhur., 1933, ii., 33, English Summary).

All these facts indicate that transplantation between fowl, pheasant and duck should be regarded as within the physiological limits of relative tissue-compatibility. The successful demonstration of the transmission of a fowl tumour to pheasant or duck does not therefore make it less likely that the filtrable agent is a cell-derivative on the one hand or more likely that it is an independent parasitic virus on the other.

Dr. Andrewes has pointed out that "the neutralisation of the Rous virus with anti-fowl serum does indeed suggest most strongly that the virus is more intimately associated with fowl-protein than are other viruses with the proteins of their hosts." This and other features such as the strict specificity of the agents seem to me to indicate that the conception of the agent as an intrinsic cell-product may more than possibly prove correct. The source of the contrast in behaviour between avian and mammalian tumours may then be traced to some inherent cellular difference in the two classes, and already signs are not lacking that some such significant difference may indeed exist. White (Jour. Genetics, 1932, xxvi., 345) studied the somatic chromosomes in 40-hour embryo chicks, and drew attention to the great range in size of the individual elements in the somatic metaphase plates, the smallest ones in the centre being absolutely on the limit of resolving power of the microscope (about 0·2 μ in diameter). This range in size of the chromosomes he regarded as characteristic of birds in general and quite unparalleled elsewhere.

Obviously the data are not yet sufficiently complete to justify any permanent conclusion. We must be grateful for Dr. Andrewes's summary of the present position and await the accumulation of those facts which alone will clarify this fascinating though difficult problem.

I am, Sir, yours faithfully,

ALEXANDER HADDOW.
Department of Bacteriology, University New Buildings, Edinburgh, July 23rd.

SCARLET FEVER EPIDEMICS

To the Editor of THE LANCET

SIR,—As many of us must, during the past year have had to cope with epidemics of scarlet fever, I have been wondering if there is any satisfactory method of controlling the spread of this disease in ordinary practice.

In 1928, with permission of the honorary staff at the Queen's Hospital for Children, Hackney, I made trial of scarlet fever antitoxin (Burroughs and Wellcome). As an example of this use: one child in a ward having been removed with typical scarlet fever, the remaining seven children were Dick-tested; three were positive and four negative. Scarlet fever antitoxin in graduated doses was given to those showing positive reactions. Three days later they were all negative. No further cases occurred. Following another case later in another ward, the same procedure was adopted, all those showing positive reactions receiving antitoxin; again there was no spread. The method is more applicable to institutions because infectious disease is there instantly discovered and prompt isolation and other precautionary measures are possible. In private practice, if immunisation is to be carried out, it seems inevitable that it must be indiscriminate, without recourse to Dick-testing. I have myself used this method in practice, but with varying results. It seems that we can only offer to contacts, usually parents and relatives, a means of prophylaxis which we must state definitely to be of doubtful value; that we may be justified in urging it for young children, debilitated persons or those with intercurrent disease; and that we can give expectation of probable prevention of the disease, or, if it is acquired, an illness less severe and with less likelihood of unpleasant sequelæ.

It would be very interesting to me, and I venture to think, other members of the profession, to know of experiences or opinions formed from the use of the scarlet fever antitoxin in the practice of general medicine.—I am, Sir, yours faithfully,

Bourne, July 21st. W. B. R. MONTEITH.

DISPLACEMENT OF THE INTERNAL EPICONDYLE INTO THE ELBOW-JOINT

To the Editor of THE LANCET

SIR,—In your issue of July 14th is published a most interesting article on this subject by Mr. N. W. Roberts. In his first two cases Mr. Roberts proved that it is possible, if the skilled manipulation be done sufficiently early, to dislodge a detached internal epicondyle that has been caught between the humerus and the ulna, and to restore it to something near its normal position, and this without recourse to open operation. The manipulation has twice been carried out successfully by one of us (St. J. D. B.). On the first occasion, a procedure similar to that described in the article under discussion was performed. On the second occasion the inner aspect of the elbow-joint was exposed and then the manipulation was carried out, showing how the epicondyle will come out of the joint provided it is carried out within a few days of the injury. Whether the necessary manœuvre is entirely free from risk we rather doubt.

Mr. Roberts' third and fourth cases are of an entirely different type, and their inclusion seems rather to confuse the issue. The internal epicondyle in these cases was no more *in* the joint than other structures displaced by the partial dislocation. One might as well say that the tendon of the brachialis anticus was *in* the joint in every case of posterior dislocation of the ulna. Reduction of the subluxation and of the displacement of the epicondyle in these cases should not have presented any special difficulties, and the success achieved, in our view, is in no way comparable to that obtained by Mr. Roberts in his other cases. In the first two of these cases the epicondyle was caught and held between the humerus and ulna, and could only be dislodged by a very skilful manœuvre or by operation, whereas in the second two the epicondyle was only displaced by its connexion with the ulna, and was never caught between the bones, though in the last this might have resulted if the reduction had been in other hands.

There seems no doubt but that separation of the epicondyle is usually the result of violent abduction of the forearm, what we like to refer to as "attempted dislocation." As a rule the gaping joint closes again leaving the epicondyle more or less displaced. Very rarely it is sucked into the inner side of the joint and prevents the humerus and ulna from coming together again. The ulnar nerve may or may not be damaged. If outward dislocation occurs the epicondyle follows the ulna and will be pushed inwards on reduction, with little chance of being caught between the bones. Again, when posterior dislocation occurs the internal lateral ligament may be torn or the epicondyle avulsed. In the latter case the epicondyle is naturally forced into the empty sigmoid notch by atmospheric pressure. On reduction the epicondyle may not slip out of the way, and then it is caught between the bones. We have films of two cases showing this sequence of events. In 1924[1] one of us (H. A. T. F.) referred very briefly to four cases of nipping of the epicondyle between the bones. Twenty-one others have since been seen by one or other of us, making a total of 25. Unfortunately none of these were seen before the dislocation, when present, had been reduced. It was difficult, and sometimes impossible, to get any clear details of the exact condition after the accident, but there appears to have been a clear dislocation, which was then reduced, in 16, and definitely no dislocation in 3. The ulnar nerve suffered damage in 12, two being cases without dislocation. Only three cases were dealt with less than seven days after the accident, and in many the interval was very much longer. With one exception every case was treated by open operation.

In the first place may we suggest that it will simplify matters if the above title be applied only to those cases in which the detached fragment is lying actually between the humerus and ulna? Secondly, the decision has to be made whether the patient benefits by manipulative treatment in place of open operation in cases of displacement of the internal epicondyle into the elbow-joint: (*a*) when no ulnar nerve paralysis is present, and (*b*) in the presence of ulnar nerve paralysis.

(*a*) It is fair to assume that manipulative treatment is likely to be successful in displacing the fragment and probably aligning it into a position compatible with a first-class result. Experience is too small to express an opinion as to whether ulnar nerve paralysis will follow such a manipulation in any of the cases. (*b*) In the presence of ulnar nerve paralysis, the manipulation appears to be a procedure not without danger. Should the reduction be successful, the patient may be faced with an operation for transposition of the ulnar nerve. Operative experience shows that open replacement of the fragment, combined with anterior transposition of the nerve in those cases in which the surgeon thinks this wise, is an eminently satisfactory method of treatment, although recovery may be slow. It is urged, therefore, that the general principle of a nerve injury complicating a fracture indicating operation, should be adhered to in cases of ulnar paralysis complicating displacement of the internal epicondyle into the elbow-joint.

We are, Sir, yours faithfully,

H. A. T. FAIRBANK,
Harley-street, W., July 21st. ST. J. D. BUXTON.

[1] Proc. Roy. Soc. Med., 1924, xviii. (Sect. Orthop.), p. 11.

PERINEO-ABDOMINAL EXCISION OF THE RECTUM

To the Editor of THE LANCET

SIR,—I have read with great interest and pleasure Mr. Gabriel's article in your issue of July 14th, and my appreciation is heightened by the fact that I have enjoyed the privilege of seeing him perform this operation at St. Mark's. I am sure that he will agree with me that surgery is indebted to Prof. Grey Turner, of Newcastle, for having introduced operators to this order of events in "combined operations" for cancer of the rectum. I was first introduced to the operation by watching it in Newcastle in 1919, and the method was published in the *British Medical Journal* (1920, ii., 734) by the originator.

For those who dislike terminological hybridity, the name "perineo-abdominal" may not be the best from an etymological point of view: I plead guilty to having introduced the term myself a few years ago, and although "I have the Greek," as we say in the Far North, I have, alas! been responsible for perpetuating a heterogeneous combination, to which we were first introduced by the great proctologists who perform the operation in the reverse direction. The description "sacro-abdominal" is a better literary combination, but is hardly so accurate a description of the modern operation which Mr. Gabriel has so well described.

I am, Sir, yours faithfully,

Harley-street, W., July 18th. G. GORDON-TAYLOR.

PANEL AND CONTRACT PRACTICE

Medical Cards

THE last report of the organising medical secretary to the London Panel Committee tells of various ways in which the doctor's time is used up in explaining procedure to insured persons.

THE MISLAID CARD

If for some reason an insured person cannot find his medical card he has to fill up a postcard form (Med. 50), on which he gives particulars of his insurance status. This is posted to the insurance committee which, after verifying the particulars given, send him a blank new card. He is instructed to take this card to the doctor of his choice who, if willing to accept him as an insured person, fills in Part A of the new card agreeing. The doctor then posts the card to the committee which returns it to the patient. Several postages are involved in this cumbrous procedure. Although, in fact, an insured person can obtain form Med. 50 from a local post office, he generally obtains it from the doctor he is consulting. If, therefore, it contained the necessary form of words for his acceptance, the whole business of joining a doctor's list could be effected on a single form.

CHANGE OF DOCTOR.

This is not always a simple matter in view of the fact that some insured persons vary widely in educational attainments. Some can hardly read at all, others often cannot read English. The instructions are couched in language that is not easy for the unlearned to follow. Take for instance the following :

" It is regretted that it is necessary to return the enclosed communication, but as the individual signatures of the applicants to transfer are not endorsed thereon it is not possible at the moment to grant the authority you require. As soon, however, as the attached letter is duly signed by all the persons concerned or, alternatively, separate applications are received, the necessary consent to transfer will be given."

This could surely be expressed more simply. Under present regulations it frequently happens that an insured person misses, it may be by a day or two, his right to transfer at the beginning of a quarter. If, for instance, he sends in a Notice on March 3rd, he will be at least two days late for transfer on April 1st, and will not be allowed to change doctor until July 1st. If during that period treatment becomes necessary he is, of course, still entitled to it from his present doctor ; but as he wants to change he is not likely to consult him, and he pays for treatment elsewhere. Why should he not be allowed a few days grace ?

IRREGULAR TRANSFERS

The doctor is supplied only with the name of the insured person who has transferred, not with his address. This makes it difficult for him either to spot an irregular transfer or to communicate with the insured person about it. A further difficulty arises when a patient living near the border of one county committee moves—it may be only across the street —into another committee's area. Such a patient is sent a new medical card with no doctor's name on it, from which he concludes he has been removed from his old doctor's list (as of course he has been), and that he must, therefore, choose a new doctor ; whereas, provided his old doctor is on the insurance list of the new committee—and most medical men living near the borders of committee areas generally join both or more committees in that area—the patient is at liberty and likely to wish to remain under the care of his old doctor. It should not be difficult to convey this by a suitable slip to these border transfers.

The primary difficulty in all these medical card matters is to put in, or on, or with, the card information which will catch the eye and be readily understood by an insured person who reads it. At the present time there is so much printed on the card, the type used is so small, that it is not to be wondered at if the great majority of insured persons have never read the rules, and often not even the slips attached to the card. Ample evidence of this is afforded by the number of insured persons with unsigned medical cards, who think they need only take them to a doctor for signature when they are ill.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Rear-Admiral G. L. Buckeridge to be Deputy Director-General of the Medical Department of the Navy vice Surg. Capt. C. V. Griffiths.

T. F. Davies to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS

R. H. Foster to be Lt. (on prob.). (From R.A.M.C., T.A., Supern. for serv. with O.T.C.)

The undermentioned Lts. (on prob.) are restd. to the estabt. : A. G. D. Whyte, R. A. Stephen, and M. J. Horgan.

ARMY DENTAL CORPS

Lt. A. N. Moon to be Capt.

RESERVE OF OFFICERS

Lt.-Col. C. W. Bowle, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

SUPPLEMENTARY RESERVE OF OFFICERS

Lt. J. N. Heales, from Somerset L.I. Supp. Res. of Off., to be Lt.

MILITIA

Maj. S. W. Hoyland retires on attaining the age limit, and retains the rank of Maj.

TERRITORIAL ARMY

Lt. T. T. P. Murphy to be Capt.

C. F. Critchley (late Offr. Cadet S. S., Univ. of Lond. Contgt., Sen. Div., O.T.C.) to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. R. E. Davie, from Active List, to be Capt.

Lt. I. Mackintosh, from Active List, to be Lt.

Lt. E. L. Hancock to be Capt.

ROYAL AIR FORCE

Flight Lt. L. C. Palmer-Jones is promoted to the rank of Squadron Leader.

RESERVE OF AIR FORCE OFFICERS

Flight Lt. E. P. Carroll relinquishes his commn. on completion of service.

INDIAN MEDICAL SERVICE

Lt. R. I. Reid to be Capt.

BOGNOR WAR MEMORIAL HOSPITAL.—The annual report states that, in consequence of pressure upon the beds, extensions will probably be needed in the near future. There were 392 in-patients, whose daily cost was reduced from 9*s.* 10*d.* to 8*s.* 1*d.*, the lowest figure since the hospital was opened in 1919. In the private wards no bed was vacant for more than a week. Income increased from £1465 to £3087, accounted for mainly by a larger volume of patients' payments.

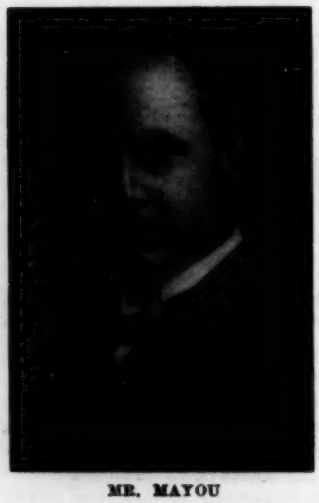
OBITUARY

MARMADUKE STEPHEN MAYOU, F.R.C.S.

PRESIDENT OF THE OPHTHALMOLOGICAL SOCIETY

WE deeply regret to announce the death of this distinguished ophthalmologist, which occurred last Friday in London at the age of 58 and in the year of his office as president of the Ophthalmological Society of the United Kingdom.

Stephen Mayou was born at Monmouth, the son of Dr. George Mayou, and received his preliminary education at Hereford Cathedral School and King's College, London, whence he proceeded for professional training to King's College Hospital. He was a successful scholar, held the Warneford Scholarship for medical students, and gained, in 1896, the Jelf medal. He took the English double diploma in 1897, and in 1901 proceeded to the F.R.C.S. Eng. He served as house surgeon at King's College Hospital, and became assistant radiographer to the hospital and demonstrator of anatomy in the medical school. He then decided upon the specialty which he later followed with such fine results and in such a variety of public positions. He was appointed clinical ophthalmologist to his hospital as well as surgical registrar, and held also a clinical post in the ophthalmological department of the London Hospital. He became assistant surgeon to the Royal Eye Hospital at Southwark, and held the same post at the Seamen's Hospital at Greenwich. He was for a time at Moorfields, being chief clinical assistant at the Royal London Ophthalmic Hospital, and was also ophthalmological surgeon for different periods at the Children's Hospital, Paddington Green, and at the Hospital for Paralysis in Maida Vale. But the institution with which his name is principally associated was the Central London Ophthalmic Hospital, where he served over a long period as assistant surgeon, pathologist, and full surgeon, being the senior member of the staff at the time of his death.



MR. MAYOU

[Photograph by Elliott & Fry

In 1903 Mayou gained the Jacksonian prize at the College of Surgeons for an essay on the pathology and treatment of conjunctivitis in its protean forms, and in 1905 was a Hunterian professor at the College, while his contributions to the proceedings of the Ophthalmological Society now became regular, and of marked value. He was, indeed, one of the most frequent interveners in the discussions of the Society for the last 30 years, and his opinions were always listened to with interest, especially when those pathological questions were in debate where his experience was so wide and so varied. He was on the council of the Society for many years, served as secretary from 1916 to 1919 and as vice-president in 1932, and last year was elected president. At the last congress of the Society he was prevented by illness on the first day from presiding, but his reception on the second day demonstrated alike the high esteem ni which he was held and the opinion of the members that he had fully merited the leading position he had gained.

Mayou was not a profuse or frequent writer, but his handbook upon diseases of the eye, which went through three editions, the last appearing in 1920, was seen to have features of practical value. This treatise was kept deliberately short, the author intimating that in his opinion the students' curriculum was already overburdened, but, while not pretending to give a complete account of diseases of the eye, it served to convey the essentials with which every medical practitioner should be familiar. He included in the book figures illustrating the microscopic appearance of such conditions as phlyctenular conjunctivitis and arterio-sclerosis of the retina, and proved that he had made himself a thorough master of this field of ophthalmology. A more widely known work is that which he wrote on ocular pathology in conjunction with his friend Treacher Collins, which embodied the results of their joint researches, and was excellently illustrated by figures, many of which were reproduced from original papers in the transactions of the Ophthalmological Society. This work, again, made no pretence to be encyclopædic but proved a most valuable handbook to ophthalmological specialists. On the death of Treacher Collins, Mayou succeeded him as medical officer to the White Oak Hospital, Swanley, an institution under the authority of the Metropolitan Asylums Board for the treatment of children up to ten years of age suffering from ophthalmia and other contagious diseases of the eye; he was also visiting ophthalmic surgeon to St. Margaret's Hospital, run, under the same authority, for the treatment of ophthalmia neonatorum. In both of these institutions he found time to give valuable service, although it was always the Central London Ophthalmic Hospital which absorbed his main attention.

Mr. Leslie Paton writes: "Others can write of the distinguished scientific and clinical work that Mayou has done. I should like to be allowed to say just a few words about another side of his work which has proved of the greatest value to British Ophthalmology but which is, as a rule, only too little recognised, work done on councils, committees, and subcommittees. Only those who were associated with him in these too often thankless tasks knew how faithfully he did anything he undertook to do. He served on the editorial committee of the *British Journal of Ophthalmology* from its initiation in 1917. That involves, as a rule, two meetings a month. He was one of the earliest members of the Council of British Ophthalmologists and, in addition to being treasurer, served on many of its committees. Only three days before his death he attended a meeting of the executive committee and almost the last letter he wrote on the evening before he died dealt with its work. He was at various times member of the council, secretary, and vice-president of the Ophthalmological Society of the United Kingdom, and I am sincerely thankful that he lived to achieve the highest honour in British ophthalmology, the post of president of that society. It is only too difficult to find men willing to give their time and energy to committee work of that type which brings little credit or honour to the individual worker, but

is in its way as essential as the more showy scientific or clinical work, and it is only an ordinary truth to say that on all these committees the place that Mayou occupied will be difficult to fill. Whether on the golf course, the riverside, or in the quietude of social life he was a charming companion. A slight occasional but characteristic hesitancy of utterance served only to draw attention to the clearness of his thinking and the lucidity of his expression. In all ways he fulfilled the dictum of our first president, Sir William Bowman, and by his life's work advanced the science of ophthalmology."

FREDERICK DITTMAR, M.D. Glasg., D.P.H. Camb.

LATE SENIOR MEDICAL INSPECTOR, LOCAL GOVERNMENT BOARD FOR SCOTLAND

THE death occurred on July 16th of this well-known authority on public health, who retired from his official post in the Department of Health for Scotland in February last at the age limit. He died somewhat suddenly at his house in Newbury, Berkshire, where he had just established himself.

Frederick Dittmar was born in Edinburgh, his father, the author of a well-known text-book, who later became professor of chemistry at Anderson's College, Glasgow, being at the time on the scientific staff of the University of Edinburgh. The son received his education, general and professional, at the University of Glasgow, where he graduated as M.B., C.M. in 1893, proceeding to the doctorate with honours three years later. He now spent a period in Vienna and acquired German as a native language, an accomplishment which stood him in good stead later. He became house surgeon and house physician to the Victoria Infirmary, Glasgow, and acted as assistant medical officer in charge of the Fever Hospital. He left Glasgow for a time to serve as M.O.H. at Scarborough, but returning to Glasgow was appointed by Dr. Burn Russell, then M.O.H. of the city, upon his staff. While serving with Dr. Russell he had particular opportunities for the study of small-pox questions from the public aspect; and he also acted as assistant medical officer to Glasgow Prison. During the first outbreak of plague in Glasgow he also gained unusual clinical experience through his coöperation during the epidemic with the late Dr. John Brownlee, the well-known statistician, who was then superintendent of the Belvedere Hospital.

DR. DITTMAR

Dr. Russell became medical member of the L.G.B. for Scotland, and was succeeded on his death in 1904 by Sir Leslie Mackenzie, the first medical inspector under that Board. Dittmar then succeeded Sir Leslie, and when the Board was amalgamated in 1919 with the Scottish Insurance Commission, thus becoming the Scottish Department of Health, Dittmar was appointed to the Department, having full familiarity with every phase of public health. His intention to remain in touch with systematic medicine was manifested by his sitting, at a much later age than usual, for the examination for the M.R.C.P. Edin.; later he became F.R.C.P. Edin., and acted as an examiner for the College on more than one occasion. At the Board he did admirable work, in particular when he took charge of the infectious diseases hospitals of Scotland. He made many special inquiries and was untiring in his energies, and his brief but concentrated report on the Island of Lewis and the conditions of housing there was the start—the somewhat sensational start—of a reform movement which has never stood still. In the later years of his service he acted frequently as medical assessor at housing inquiries under the new Acts. While he wrote no systematic book he published valuable papers upon many public health matters, notably one on slaughter houses and meat inspection; another, in coöperation with Brownlee, on the administrative treatment of scarlet fever, or rather of undefined cases diagnosed as such; and a third on the control of small-pox. In his writings, as in his official actions, he was a sound though friendly critic; his judgment was widely appreciated.

Dittmar was highly popular with his staff, who entertained him at luncheon on his retirement and made him a present of books. His death was unexpected, and occurred when he appeared to have a pleasant phase of retirement before him. The photograph which is reproduced here shows him in young middle life, no more recent portrait being available. He leaves a widow, a distinguished classical scholar, and three daughters, one of whom is a medical student.

JAMES WILLIAM STEEL, M.B. Edin.

THE death of Captain J. W. Steel, of Bournemouth, at St. Bartholomew's Hospital on July 14th, will be felt by many who served with him on the Salonica front during the war. Having graduated in medicine at Edinburgh in 1913, and held a resident post at Bolton Infirmary, he joined the R.A.M.C. and was attached to the 28th General Hospital on the Monastir Road where, writes one of his war-time colleagues, his ability as a physician and his genius for music made him an outstanding figure in the mess, the wards, and at the concerts given to entertain the men. "Jimmy Steel," he adds, "was regarded with universal affection; every man, woman and child who came into contact with him had a good word for him." After the war Steel put up his plate in Bournemouth and became a popular practitioner there.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, last year admitted 6725 in-patients and treated 28,484 out-patients, a considerable reduction in each category. The annual report suggests that these reductions are probably attributable to the higher standard of health prevailing throughout 1933, a view borne out by the similar experience of many other hospitals. There was an adverse balance on the year of £11,698, which would have been much greater but for the receipt of £17,667 in legacies. The rebuilding fund makes slow progress; £11,655 was collected last year. In-patients cost £4 1*s.* 1*d.* each per week; out-patients cost 8*s.* 9*d.* each. The new nurses' home in Guilford-street is now completed and ready for occupation. It is a seven-floored building on the site of 13 houses, and contains accommodation for 156 nurses. Eventually there will be an extension provided by the demolition of three other houses, to include the preliminary training school for nurses.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Housing Policy: The Question of a Housing Commission

IN the House of Lords, on July 18th, Lord BALFOUR OF BURLEIGH moved the following motion:

"That in the opinion of this House the provision of one million houses to be let at a weekly rental, inclusive of rates, of 10*s*. and under, in addition to the slum clearance proposals of the Government, is an urgent national need, and to request the Government to consider the desirability of setting up forthwith, under the authority of the Minister of Health, a Housing Commission armed with all necessary powers, and charged with the specific duty of securing the erection of such houses by local authorities and public utility societies on a national plan and with the minimum of delay."

He said that the intentions and desires of the Government in regard to housing were excellent, but there was a danger of the failure of the Government's programme through lack of a coherent plan. They knew of the plan for slum clearance and they were told that there was coming a plan for dealing with overcrowding, but they have not yet been told of any plan for additional new houses to let at low rents, and he thought that the Government had tackled this problem from the wrong end. It was, he said, now admitted as a principle, to which the Government was almost prepared to agree, that the provision of a certain standard of housing accommodation for every family at a rent within the family capacity to pay must as an ultimate aim be accepted as a national duty and a public responsibility. Housing was by far the most important of the social services.

There had been eight Ministers of Health since the war, and still they had not found out what the task was with which they were faced and which they had to accomplish. That seemed to be one of the strongest arguments for the establishment of a Housing Commission. In the provision of a million houses there were certain factors to be taken into account. First of all there was the excess of families for the number of available houses. That excess of families had increased in the last census period, and was now over a million. He knew that was subject to qualification. There was also the degree of overcrowding. The Registrar-General's figures gave, he thought, 2,600,000 people living more than two to a room—admittedly an excessively high standard. More houses were needed for them. Then there was the estimated future increase in the number of families. Economists said that it would amount to 600,000 more families in the next ten years. There was also the progressive deterioration and wearing out of the houses.

Lord Balfour said he regarded a million houses at 10*s*. a week as a conservative estimate of the requirements. If that was so, the Government would have to adopt a totally new point of view. It was necessary to make a plan and secure the advantage of long-scale planning. The provision of a million houses would cost £350,000,000 or £400,000,000 spread over the necessary period. He was not afraid of that. Money could easily be raised by the Government at about 3 per cent. There should be a guarantee to provide cheap money inasmuch as that was far cheaper than a subsidy. The Government was open to criticism also on their attitude towards private enterprise. It was common ground that private enterprise now could not provide houses at the required standard to let at 10*s*. a week. What was needed was continuity in housing policy and continuity in plan. If a housing commission had been set up in 1919 some of the mistakes of the past would have been avoided, and if it was set up now new mistakes, which would otherwise be made, would be avoided. What he was suggesting was not a colossal bureaucracy but a central constructive organising brain to view the whole thing from a national point of view.

Lord AMULREE said that although very substantial progress in housing had been made since 1919, and much money had been expended both by the Exchequer and the local authorities, the various schemes had made little or no provision for the lower paid worker who was still left in the slums and overcrowded houses. The real measure of overcrowding was to be ascertained on the basis of living accommodation per person.

Two persons to a room was a low standard; the minimum standard was generally regarded as an average of one and a half persons to a room. The London County Council on its building estates observed a standard of one and a quarter persons per room. If they took an average of one and a half persons to a room they found some very striking results. According to the census of 1931, 2,630,000 persons lived more than two to a room. The additional accommodation required to rehouse them at one and a half persons to a room might be estimated at a further million rooms, or 250,000 houses—probably 300,000 houses if they allowed for the segregation of the sexes. Competent observers considered that the number of families might be expected to increase at an enhanced rate compared with the increase of population. Further, many of the present houses were gradually wearing out, and according to his information there would probably be a wastage of about 30,000 houses per annum for the next 15 or 20 years.

If, said Lord Amulree, they took all these other factors into account it was estimated that 1,900,000 houses must be provided during the next ten years to house families separately and at least 1,000,000 of these must be provided at inclusive rentals of 10*s*. a week and under to supply the needs of the lower paid workers. For this nation-wide undertaking a special Board such as a Housing Commission would make for continuity of policy, almost impossible under the present system with some 1800 local authorities.

The Earl of LISTOWEL said that the report of the Amulree Committee on Housing came at an extraordinarily opportune moment, and he urged the Government to embody in their own Bill certain of its outstanding recommendations. The Labour Party, to which he belonged, believed that over a period of ten years 2,000,000 or 3,000,000 new working-class houses should be built.

The Earl of CRAWFORD said there were scores of thousands of new houses in London to-day infested with vermin. The bed-bug was the real health problem in thousands of houses, and it was rapidly extending. The bed-bug was a most dangerous creature; it produced restlessness and troubled sleep which in course of time led to debility and general ill-health. The owners of these new blocks of infested property were now the sanitary authorities, and the Government should not rush their building programme unless they had tolerable assurance that the new houses in a year or two would not be infested with this curse. Further, they should not immediately begin to rebuild upon a cleared slum area.

GOVERNMENT STATEMENT

Viscount HALIFAX, president of the Board of Education, replying to the debate, said that he would take steps to see that the concrete proposals made by Lord Crawford in regard to bug infestation were brought along with other points raised in the debate to the notice of the Minister of Health. In regard to the proposal for setting up a Housing Commission he found it hard to believe that the rapid execution of a housing policy would be facilitated by interposing a new body between the Minister and the local authorities upon whose intimate, rapid, and cordial coöperation all housing policy must ultimately and entirely depend. For the most part all the field and scope of work contemplated for the Commission was exactly what was being done to-day by the Ministry of Health; no one had said that that Department was not doing it properly. The existing position was one in which local authorities were charged with the duty of considering and submitting proposals for working-class houses in their areas, as they were charged with the further duty of abolishing and replacing slums, and under legislation to be forth-

coming, he understood they were to be charged with a similar duty in regard to the elimination of overcrowding. Therefore the principle stated in the Amulree Committee's report was the basis of the present Government policy.

As to whether the object of policy should be, as Lord Balfour of Burleigh's motion suggested, the production of one million houses to let at inclusive weekly rentals of 10*s*., he did not believe that the solution of the housing problem was facilitated by round statements of doubtful validity. He thought that the calculations on which the figure of 1,000,000 houses appeared to be based were very far from being secure. That figure was subject to various deductions, the upshot of which must be that the number of houses required to be provided at these rents on the committees' own calculation would be very much less than the suggested 1,000,000. He hoped Lord Balfour would not press as the primary object of housing policy the provision of a definite number of houses, whether 1,000,000 or any other. The principle of such a policy had been tried by successive Governments during the last 15 years and had been discarded as unsound. The present Government policy was rather that of providing, in accordance with an ordered plan, whatever number of houses might be needed to overcome the evil that rightly moved the country to indignation, and to do that by beginning with a direct attack on the conditions which were the most intolerable. Already local authorities had submitted plans for the demolition of all houses which they had found in their areas to be unfit for habitation, and for the provision of accommodation to replace them at low rents. During the next five years 280,000 houses unfit for human accommodation would be swept away, and 294,000 houses would be built for those who were now forced to live under intolerable conditions.

At the end of five years, said Lord Halifax, there would, as they hoped, except in a few towns where a longer period was necessary, be no more slums. In the coming autumn the Government would propose to Parliament legislation to define standards of accommodation and to provide a sufficiency of houses to enable those standards to be observed. These proposals would involve re-housing and re-planning on a scale which it had never yet been possible to contemplate in this or any other country. The Government proposed as an integral part of the next stage of their housing policy to appoint a strong Advisory Committee to which the Minister of Health would be able to refer at all stages for advice on the problems still to be solved.

Lord BALFOUR said Lord Halifax's statement had given him and his friends a substantial degree of satisfaction. He asked leave to withdraw his motion, which was given.

Housing in Scotland

On July 18th, in Committee of Supply, Mr. SKELTON, Under-Secretary of State for Scotland, said that 1933 was a record year for the number of houses completed with State assistance. The number of houses completed under all the Acts was 20,915. For the first six months of 1934 there was again a record, the number of houses completed with State assistance being 11,850. The Government had not been content with attempting to concentrate the attention of local authorities on slum clearance merely by legislating; they had attempted, not without success, to institute a real drive in administration, and in every other way, towards the development and acceleration of slum clearance programmes. The estimated number of uninhabitable houses in Scotland was 61,200 and the local authorities' programmes, mostly fixed, but some still provisional, proposed during the five-year period to build 56,394 houses, or over 92 per cent. of the total number recognised as uninhabitable. Some small proportion of the 61,000 houses might be capable of being reconditioned. The next stage of their programme was to deal drastically, and he hoped finally, with overcrowding. In Scotland about 15 per cent. of the population lived three to a room. The English figure was only about 1·5 per cent., so that here they had a special Scottish problem.

Motor Noise and Public Health

The Road Traffic Bill was further considered by the House of Lords in Committee on July 19th, when Lord ELTON (in the absence of Lord Horder) moved a new clause providing that it should be an offence under the principal Act to sell, or to offer for sale or supply, a motor vehicle or trailer for use on the road in this country with an inefficient silencer. The facts of the present situation were, he said, simple, but rather startling. It was already illegal to use on the roads a motor vehicle with an inefficient silencer, but it was not illegal to supply such a vehicle. Under the Road Traffic Act 1930 it was provided that motor vehicles should be equipped with efficient silencers, but this regulation was openly and deliberately flouted.—The Earl of PLYMOUTH, for the Government, said he did not think the solution was quite as easy as was suggested. The present difficulty of enforcement was largely due to the lack of practical means of quantitative measurement of noise, and the special committee of the Department of Scientific and Industrial Research were being asked to consider that point. So soon as definite and adequate "performance specifications" could be laid down, the Minister under the powers which he already possessed would not hesitate to include them in the regulations.—The Earl of CRAWFORD said it might take a long time to settle the methods of quantitative measurement of noise, and meanwhile it would be an encouragement if the Ministry conducted prosecutions against people who left their cars roaring in the street at two o'clock in the morning.—The Marquess of SALISBURY said that when, as Lord Horder had told them, this evil was really antagonistic to the public health the time had arrived when something ought to be done.—Lord JESSEL thought it did not need a departmental committee to say what was noise and what was not.—The new clause was agreed to.

In the House of Commons on Friday, July 20th, the Domiciliary Nursing Services Bill was read a second time.

Malnutrition in School-children

On a Vote of £28,110,018 (including a supplementary sum of £1,506,000) to complete the sum necessary to defray the salaries and expenses of the Board of Education,

Mr. WEST moved to reduce the Vote by £100. He said he understood that there were roughly 2,000,000 children in this country between two and five years of age, and of these children 200,000 came from overcrowded or slum homes. It had been pointed out by Sir George Newman year after year that what was wanted was more nursery schools. Last year there were only 58 in the whole country, whereas the number needed must be at least 250.

Miss RATHBONE said that an attempt had been made by the Parliamentary Secretary to the Board of Education and by officials to lull the public conscience to rest on the subject of malnutrition. It was maintained first that there was no widespread malnutrition among school-children; and, secondly, that the arrangements for feeding necessitous school-children were sufficient to cope with such malnutrition as existed. Both these assurances were, on the face of them, incredible. There had been lately several inquiries into minimum subsistence needs and the cost of supplying those needs, and every one of those inquiries had produced a scale of needs and an estimate of the cost of supplying them such as could not possibly be realised by a family with several children permanently on unemployment pay, or even by an agricultural labourer or a lowly paid town labourer. She believed the school medical staff were wrong when they said that only 1 per cent. of children were suffering from under-feeding. The routine medical examination took place three times in a child's school life—at 5, 8, and 12 years of age. How could malnutrition be tested in that way It might be urged that it was the business of a school teacher to note preliminary symptoms of malnutrition and report them to the head teacher, who, if he thought necessary, would send the child for a special medical examination. But were the school teachers competent to do that? They were not medically trained. If

it was not possible to examine the children medically more frequently, surely they could be measured and weighed. Not nearly enough use was made of school nurses. Arrangements could be made with the local nursing associations. The tests and standards of school medical inspection should be much more carefully regulated and standardised. But even if all this were done she did not believe that they would arrive at a satisfactory test of malnutrition. The proper way to deal with the problem was to adopt a scientific income test worked out by the Board of Education. If the income scale was worked out for the country as a whole, and every child whose parents came below that scale was given free meals, they would know that there would not be a single under-fed child, except where the under-feeding was the parent's fault, and then pressure could be brought to bear through the law.

Mr. RAMSBOTHAM (Parliamentary Secretary to the Board of Education), replying to the debate, said that he could not help feeling that having regard to the difficulties of the position and the complexities of the diagnosis the medical officer was just as well qualified to express an opinion on the question of malnutrition as Miss Rathbone. Any department which desired to get the best evidence and expert opinion must take note of the opinion expressed by the medical officers and the reports of school teachers. He thought that Miss Rathbone would do a great deal more good for the cause to which she was devoted by using her great influence to impress on all concerned the necessity for a better understanding of the diet given in homes. One of the great difficulties of medical officers was that when children came to them showing signs of malnourishment, or under-nourishment, it was not always due so much to poverty in the home as to improper and inadequate diet.

The motion to reduce the Vote was rejected by 178 votes to 39.

Sir G. COLLINS (Secretary of State for Scotland), speaking on a Vote of £4,106,935 for the salaries and expenses in connexion with public education in Scotland, which was discussed by the House of Commons in Committee of Supply on July 18th, said that although the reports of the school medical officers and medical officers of health had conveyed no signs that malnutrition among school-children was increasing, one could not ignore the fact that malnutrition did exist. He was advised, however, that defective nutrition was not merely a question of lack of food, but might be largely due to the use of foodstuffs which did not produce good bodily structure and resistance to disease. If that were so, consideration might have to be given to the question of instructing the people in what he might term "the elements of nutrition." It was better to build up healthy children capable of resisting disease than to spend money on the treatment of diseases which could be prevented by proper diet.

Road Traffic Bill

In the House of Lords on Tuesday, July 24th, the Road Traffic Bill passed through the Report stage.

Duty on Artificial Teeth

In the House of Commons on July 24th, Dr. BURGIN, Parliamentary Secretary to the Board of Trade, moved that they House should approve of an Order made under the Import Duties Act, imposing an additional duty on artificial teeth.

Mr. RHYS DAVIES said he believed that the duty would amount to about 1½*d.* per tooth, and he would like to know whether a request for the duty had come from the dentists or from the manufacturers of teeth in this country.

Dr. BURGIN said that there were some 30 million artificial teeth used every year in this country. Ten millions were manufactured at home and about 20 million were imported. The British industry was in a position to meet the whole of the requirements of modern dentistry in this country and to supply all United Kingdom users with teeth of home manufacture. The imported teeth came from the United States of America, Palestine, Germany, France, and recently from Japan. The highest duty payable on a single tooth was just under 1½*d.* The lowest price payable for an operation which involved the supply of a single tooth under the National Health Insurance Acts was 5*s.*, and a duty which could not in any circumstances amount to more than 1½*d.* a tooth would not increase the cost of a denture to the consumer by a single fraction.

Mr. DAVIES asked whether an agreement had been come to with the dentists to that effect.

Dr. BURGIN said that the committee which had examined this matter were of opinion that the increase in duty would not affect the price paid by the consumer.

The motion was agreed to.

HOUSE OF COMMONS

WEDNESDAY, JULY 18TH

Pedestrian Crossing Places in London

Mr. CURRY asked the Minister of Transport if, in view of his recent experiences in using the pedestrians' crossings in London, he could now make any statement which would result in more public advantage being derived from them.—Mr. HORE-BELISHA replied: The experience so far gained with pedestrian crossing-places which have been marked at a number of road junctions in London is sufficiently satisfactory to justify the extension of the scheme to other localities, and I am making proposals for such extensions to the highway authorities concerned.

Spirits for Medical and Scientific Use

Dr. SALTER asked the Chancellor of the Exchequer the quantity of spirits used respectively for the manufacture of recognised medical preparations, or for scientific purposes, in respect of which a rebate of duty was granted under Section 4 of the Finance Act, 1918, as amended, during the latest available financial year.—Mr. DUFF COOPER, Financial Secretary to the Treasury, replied: The quantity of spirits upon which rebate was paid under Section 4 of the Finance Act, 1918, as amended, during the year ended March 31st, 1934, on the ground that the spirits were used in the manufacture or preparation of recognised medical preparations, or for scientific purposes, was 584,000 proof gallons. Information is not available as to the quantities used under the respective heads.

THURSDAY, JULY 19TH

Unemployment Insurance Statutory Committee

Mr. THORNE asked the Minister of Labour is he could now state the name of the chairman and the names of the other members of the statutory committee under Part I. of the Unemployment Act; and what salary the chairman, the vice-chairman, and the other members of the committee were to receive.

Mr. LAWSON asked a similar question.—Mr. O. STANLEY replied: The members of the Unemployment Insurance Statutory Committee are: Sir W. H. Beveridge, K.C.B. (chairman); Mr. A. L. Ayre, O.B.E., J.P.; Mr. A. D. Besant, B.A., F.I.A.; Captain the right hon. C. C. Craig, P.C. (Irel.), D.L.; Mr. A. Shaw, J.P.; Miss Katharine J. Stephenson, C.B.E., J.P.; and Mrs. M. D. Stocks, B.Sc. (Econ.), J.P.

The chairman will receive a salary of £1000 per annum, and the other members' fees of five guineas for each day spent in attending a meeting, subject to a maximum of £500 in a year. No member will be required to give full time to the work of the committee.

Refuse Disposal in London

Sir FRANCIS FREMANTLE asked the Minister of Health if he had now received the report from the advisory committee on the disposal of London refuse, and when it would be published.—Sir HILTON YOUNG replied: I understand that the interim report is likely to be received before the end of the present month. I am not in a position to make any statement as to publication.

Institutions for the Deaf and Dumb

Mr. CAPORN asked the Minister of Health how many county or county borough councils had applied for permission to contribute towards the support and maintenance of institutions for deaf-and-dumb persons; and whether he could state the names of such councils and, in each case, the amount of the proposed subscription and the action taken by him in connexion with such application.—Sir HILTON YOUNG replied: Thirty county or county borough councils have applied during the past year for my consent to the payment of subscriptions to missions for the deaf and dumb, and I understand that at least nine other councils are paying annual subscriptions to such missions. I will send my hon. friend a statement giving the names of the councils and the amounts of the subscriptions, and showing what action has been taken on each application. In those cases in which sanction has not yet been given to the proposed subscriptions, I am making further inquiries as I am not at present satisfied that the councils in question have given adequate consideration to the needs of the missions in respect of the placement of deaf-and-dumb persons in employment.

Mr. CAPORN asked the Minister of Health whether he was satisfied that local authorities were making as wide a use of the powers provided under Section 67 (6) of the Poor Law Act, 1930, as was desirable in the public interest; whether he had received adequate response to his circular No. 1337, dated May 22nd, 1933; and whether he would consider the desirability of extending the provisions of Sections 2, 3, and 4 of the Blind Persons Act, 1920, to deaf-and-dumb persons.—Sir HILTON YOUNG replied: The answer to the first two parts of the question is in the negative. I am, however, taking action with a view to securing closer attention by the local authorities to the suggestions made in the circular mentioned by my hon. friend, and as at present advised I do not consider that fresh legislation on the lines he suggests is desirable.

Imported Liquid Eggs

Lieut.-Colonel ACLAND-TROYTE asked the Minister of Health whether he had any information to show that the United States of America, or any other countries, prohibited the importation of liquid eggs on grounds of health; and whether he would consider prohibiting their importation to this country on these grounds.—Sir HILTON YOUNG replied: The answer to the first part of the question is in the negative. Liquid eggs imported into this country and intended for food must be free from preservatives and fit for human consumption, and, subject to those conditions, I am not aware of any reason for prohibiting their importation on grounds of public health.

Temperature in the House of Commons

Mr. BERNAYS asked the First Commissioner of Works whether he would examine the possibility of fitting electric fans in the chamber in order to produce a cooler atmosphere during the summer months.—Mr. ORMSBY-GORE replied: The air is already drawn through this chamber by means of electric fans which could be speeded up if necessary, but I fear that the draughts created thereby would inconvenience hon. Members. The installation of electric fans in the chamber itself would only create draughts without reducing the temperature, which during the recent warm weather has never exceeded 71° F. To reduce the temperature further without increasing the humidity of the air to an uncomfortable point would involve provision of plant at a cost of some £4000 or £5000, in addition to running costs of some £500 per annum; and I should be disposed to doubt whether conditions as they exist are such as to warrant expenditure of that order.

Ribbon Development and Road Accidents

Mr. CADOGAN asked the Minister of Transport whether, in view of the continued increase of road accidents, it was his intention to introduce legislation dealing with ribbon development on the main roads at an early date.—Mr. HORE-BELISHA replied: I am devoting attention to this question in conjunction with my right hon. friend the Minister of Health, and my hon. friend will not expect me to make any statement as to legislation.

Imports of Dental and Medical Appliances

Mr. LENNOX-BOYD asked the President of the Board of Trade if his attention had been drawn to the fact that the imports of dental, surgical, medical, and veterinary instruments and appliances (except optical) had increased from £163,813 in the first half of 1932 to £215,250 in the first half of 1933, and to £247,022 in the first half of 1934; and what further steps he proposed to take to protect the British industry manufacturing these scientific goods.—Dr. BURGIN, Parliamentary Secretary to the Board of Trade, replied: I am aware of the facts to which my hon. friend draws attention. Any question of an increase in the duty on these goods must be dealt with by the ordinary procedure under the Import Duties Act.

MONDAY, JULY 23RD

Tarred Roads and Cancer of the Lung

Mr. CLARRY asked the Minister of Health whether his department had any evidence that cancer of the lung might be caused by dust from tarred roads; and if there were any known fatal cases of lung cancer attributable to this cause.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend is advised that a relation between the inhalation of dust from tarred roads and cancer of the lung has not been established, and it is, therefore, not possible to say whether any deaths from this disease can be attributed to this cause.

Sir A. M. SAMUEL asked if the Minister had any record or information showing why there were these great increases in the number of recorded cases of cancer of the lung.

Mr. SHAKESPEARE: I would not put it as high as that. The percentage of cancer of the lung is very small.

Sir FRANCIS FREMANTLE asked if the Minister was aware that the number of deaths from cancer of the respiratory organs was only 90 per million, compared with 1500 altogether from cancer generally.

TUESDAY, JULY 24TH

Food Poisoning in Lincolnshire

Mr. THORNE asked the Minister of Health whether he could give any information to the House in connexion with the 100 people living in Lincolnshire villages who were suffering from an illness caused by some kind of food poisoning; and whether he had received any information from the hospital authorities about the matter.—Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replied: My right hon. friend has received reports from the district and county medical officers of health, who state that about 30 persons in the Welton Rural District were affected but that all have now recovered. The cause of the outbreak has not been established, but some pickled meat is suspected.

Grants for Rural Water-supplies

Mr. WELLS asked the Minister of Health the total amount granted in respect of rural water-supplies to date.—Mr. SHAKESPEARE replied: Grants to the total of £132,500 have been provisionally allocated in respect of schemes for 361 parishes estimated to cost £1,037,000.

Medical Practitioners and Economy Measures

Mr. D. G. SOMERVILLE asked the Minister of Health what arrangements had been made up to date to restore in part to doctors and chemists the losses suffered by them as a result of the economy measures in 1931.—Mr. SHAKESPEARE replied: I am sending my hon. friend a copy of a circular which was issued by my department to insurance committees on June 20th, setting out the arrangements for giving effect to the decision of the government to restore, as from July 1st, one-half of the deduction made from the remuneration of insurance practitioners and chemists, as a measure of economy, from Oct. 1st, 1931.

Official Pensions and Salary Cuts

Sir HERBERT SAMUEL asked the Chancellor of the Exchequer which were the classes of persons in the service of the Crown or local authorities the amount of whose pensions would be diminished through the fact that their pensions were assessed on rates of salaries which would have been affected by the temporary cuts in salaries or grants made by Parliament in 1931.—Mr. CHAMBERLAIN replied: Among the main classes in question are the following: Local Government Officers, in so far as they have been subjected to an economy cut and have not been

permitted to contribute on and to be pensioned on their uncut salaries under the London Local Authorities Superannuation (Temporary Provisions) Act, 1932, and the Local Government and Other Officers' Superannuation (Temporary Provisions) Act, 1933. As regards Civil Servants and others whose pay was subject to periodical variation by reference to the cost-of-living figure, their pensions have been calculated as from July 1st, 1931, on the basis of a cost-of-living figure of 50 in accordance with the provisions of a Treasury Minute dated March 20th, 1922 (House of Commons Paper 55 of 1922). The figure of 50 for calculation of pensions was fixed in June, 1931, not as part of the emergency measures in the autumn of 1931.

MEDICAL NEWS

British Industries House: Medical Section

The opening of the Medical Section of the British Industries House, announced in our columns last week, proved a popular function. The Section was opened by Lord Derby, who said that the movement made particular appeal to him as head of the Travel Association, while he emphasised his belief that those who came to this country for pleasure would be more readily induced also to do business if a convenient centre were furnished. Here, he said, was such a centre from which hospitals could draw practically all that they required. The meeting was crowded, over two thousand persons being present and, on all hands, it was agreed that the display showed the British manufacturer to be alive in a comprehensive manner to the material needs of hospitals, whether those needs were manifested by the demands of the staff, the amenities of the patients, or the facilities for scientific progress.

University of London

At recent examinations the following candidates were successful:—

POST-GRADUATE DIPLOMA IN BACTERIOLOGY

Mary C. Baker, D. N. Chakravarti, S. C. Ghosal, Gareth P. Gladstone, Vladimir Glass, P. P. Grigg, Betty C. Hobbs, G. W. Rea, and F. C. Storrs.

DIPLOMA IN MEDICAL RADIOLOGY

W. M. Hewetson, Patrick Hogan, S. R. G. Pimm, A. M. Vlok.

Dr. J. H. Gaddum has been appointed to the university chair of pharmacology at University College as from July 1st, 1935. He succeeds Prof. E. B. Verney.

Since the beginning of this year Dr. Gaddum has been professor of pharmacology in the Egyptian University, Cairo. An arts graduate of Cambridge he qualified as M.R.C.S. from University College Hospital in 1924. Joining the staff of the National Institute of Medical Research in 1927, he worked at first on thyroxine and allied compounds in collaboration with Prof. Harington. He was associated with Dr. H. H. Dale in his early work on the liberation of acetylocholine at nerve-endings, and further investigated the physiological behaviour of vaso-dilator substances with U. von Euler (Stockholm), H. C. Chang (Peiping), H. Schild (Münich), and others. The general result of this work was to suggest that acetylcholine—or some related choline ester—is the chemical transmitter of the effects of nerve impulses, not only at the peripheral endings of para-sympathetic nerves but also at the synaptic junctions in the ganglia of the whole autonomic system. He is also the author of a Medical Research Council report on the biological standardisation of neoarsphenamine.

Dr. J. R. Marrack has been appointed to a new chair of chemical pathology tenable at the London Hospital Medical College.

Dr. Marrack was born in 1886 and educated at Blundell's School. He graduated in medicine at Cambridge in 1912 and held the John Lucas Walker studentship, the R. C. Brown research scholarship, and a Beit fellowship. He was elected a fellow of St. John's College and was university lecturer in chemical pathology, making investigations of metabolic disorders in relation to arthritis. Joining the Royal Army Medical Corps in 1914, he served with distinction throughout the war, being mentioned in despatches and receiving the D.S.O. and M.C. In 1919 he became chemical pathologist to the London Hospital and lecturer in chemical pathology in the medical college. With Dr. P. N. Panton he is the author of a text-book, "Clinical Pathology." His later work finds its justification in a valuable report to the Medical Research Council on "The Chemistry of Antigens and Antibodies." This was reviewed in a leading article in THE LANCET of Feb. 24th last.

University of Wales

At recent examinations the following candidates were successful:—

M.D.

A. R. Culley and W. Phillips.

M.B., B.CH.

Alice D. Alban, T. A. Blyton, Enid G. Fisher, M. E. Gordon, R. W. Griffiths, Ira B. Lawrence, and S. R. Saunders.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—F. G. S. Alderson, Univ. of Leeds; G. W. Bender, St. Mary's Hosp.; J. T. Boocock, Univ. of Leeds; J. A. McClintock, King's Coll. Hosp.; A. J. McGuire, Charing Cross Hosp.; H. J. Ripka, London Hosp.; and F. W. Treadwell, Univ. of Birmingham.

Medicine.—F. G. S. Alderson, Univ. of Leeds; J. A. Amor, St. Mary's Hosp.; and S. M. Sabet, Welsh National School of Medicine, Cardiff.

Forensic Medicine.—T. D. R. Aubrey, Univ. of Oxford and Bristol Royal Infirmary; J. W. D. Bull, Univ. of Cambridge and St. George's Hosp.; W. C. Campbell, Univ. of Birmingham; D. S. G. Genge, Univ. of Cambridge and St. Thomas's Hosp.; S. Klein and J. E. T. Munn, St. Mary's Hosp.; S. M. Sabet, Welsh National School of Medicine, Cardiff.

Midwifery.—T. D. R. Aubrey, Univ. of Oxford and Bristol Royal Infirmary; J. W. D. Bull, Univ. of Cambridge and St. George's Hosp.; G. W. Bender, St. Mary's Hosp.; C. C. Joannides, Univ. of Graz and Westminster Hosp.; S. J. Navin, St. Mary's Hosp.; J. C. Paterson, Univ. of Oxford and St. George's Hosp.; and J. F. L. Walley, Univ. of Cambridge and St. Mary's Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: G. W. Bender, S. Klein, A. J. McGuire, and H. J. Ripka.

University of Glasgow

The King has approved the appointment of Dr. Samuel James Cameron to be regius professor of midwifery in succession to Prof. J. M. Munro Kerr who retires on Sept. 30th.

Dr. Cameron is obstetric surgeon and gynæcologist to the Glasgow Maternity and Women's Hospital, and consultant to several other hospitals in the city and locality. He graduated as M.B. at Glasgow University in 1901 and after holding posts in the anatomical school and in hospital, became assistant to the regius professor of midwifery. Joining the staff of the Western Infirmary, he wrote widely on gynæcological subjects. Appointment to the Glasgow Maternity Hospital followed, and Dr. Cameron was elected F.R.F.P.S. in 1916. He became university lecturer in clinical obstetrics and besides producing his "Manual of Gynæcology," edited the "Glasgow Manual of Obstetrics." Accounts of his observations on the prevention of toxæmia in pregnancy have lately appeared in our own columns (1932, ii., 731) and elsewhere. Dr. Cameron is a fellow of the British College of Obstetricians and Gynæcologists and an examiner for the Scottish Central Midwives Board.

University of Edinburgh

On July 18th the following degrees and diplomas were conferred:—

M.D.—W. J. Candlish, J. R. Davidson, F. A. Duffield, Phyllis M. Edwards, *Annie E. Ferguson, W. H. Gillespie, *R. G. Hood, *H. L. Khosla, J. L. Law, *W. V. Macfarlane, S. L. A. Manuwa, *James Milne, W. E. Orchard, Robert Porteous, D. M. Scrimgeour, and **C. E. Van Rooyen.

C.M.—*H. J. P. Brüwer.

* Commended for thesis.

** Highly commended for thesis.

Ph.D.—B. B. Dikshit, M.B.; R. K. Goyal, M.B.; and Basudeva Narayana, M.B.

M.B., Ch.B.—F. S. Airey, A. K. Arif, *R. W. Armour, S. O. Awoliyi, D. A. Baird, P. B. Barker, William Barnetson, P. G. Barrow, D. R. Beaton, *D. L. C. Bingham, J. F. Birrell, W. R. Black, William Blackwood, P. R. K. Bradbury, R. M. Brown, Olive M. Browne, J. H. Brownlee, J. A. Buchanan, J. C. Burgin, W. D. A. Callam, J. D. Cameron, Nora Campbell, W. R. Campbell, Maurice Cay, Nityananda Chakravarti, J. A. Chalmers, R. W. Chalmers, Douglas Clarke, Kathleen B. Cobb, T. J. Cockburn, L. M. Comissiong, W. C. J. Cooper, A. F. Cowan, W. J. A. Craig, T. D. Culbert, J. D. Davies, H. W. Dryerre, J. R. Durham, I. M. D. N. Farquharson, S. L. Forrest, H. F. Galler, Ann F. Gibb, David Gilmour, J. C. Goligher, H. M. Grant, J. S. Grant, N. A. Gray, Norman Gray, R. D. Gray, Arnold Greenblatt, Gunvald C. Gundersen, M. I. Hall, Alison M. B. Hamilton, John Hart-Mercer, W. K. Henderson, H. B. T. Holland, Isabella Hood, James Hutton, Augusta S. Inglis, *A. J. Innes, J. R. B. Johnstone, Josephine J. M. Kamm, J. S. Kaufman, J. M. Kerr, T. A. Kester, J. H. Kretzmar, G. K. Lloyd, N. M. L. Lund, John Macaskill, I. R. I. MacDonald, W. T. Macdonald, J. A. B. M'Dougle, G. B. MacGibbon, J. H. M'Intyre, W. R. H. Mackay, I. K. MacKenzie, C. R. M'Laughlin, Neil Maclean, I. P. J. MacNaughtan, John Magill, J. A. Malloch, William Maxwell,

J. H. Miller, N. C. F. Milne, E. K. Morris, *K. M. Morris, T. M. Murdock, G. M. Naicker, E. E. Nathaniel, C. C. Nicholson, George Nisbet, E. F. Northcroft, G. J. Partington, M. K. Pillai, A. W. Reeve, S. C. C. Remedios, *A. J. Rhodes, S. G. Roberts, James Ronald, Samuel Rosner, A. I. Ross, J. A. Ross, G. D. Rowley, A. H. Saleh, James Sandilands, Jane A. M. Shepherd, C. H. Smith, Maud I. Smith, Thomas Sommerville, J. M.M. Steven, Janet P. Stewart, *J. K. Sutherland, Muriel A. W. Swanston, G. H. Taylor, Mary W. Taylor, J. F. Thomson, R. N. Traquair, D. G. Waddell, Patricia S. Warren, E. S. Watson, A. J. Webster, J. O. Westwater, H. I. Whitelocke, Molly B. Wilson, R. H. Winfield, I. U. Young, John Young, and Katharine M. Young.
* Passed with honours.

D.P.M.—M. U. Ahmad, William Aitchison, Adam Armit, M. W. M. de Silva, Israel Gordon, Ellen M. Hegarty, Aileen E. Mathers, and Robert Woodrow.

D.T.H. & H.—Harry Bayliss-Stokes, V. E. M. Lee, A. W. Rose, G. J. Smit, and George Watt.

Diploma in Psychiatry.—Laura M. D. Mill.

Diploma in Radiology.—F. M. Gordon and A. R. Saby.

The following awards of prizes were made:—

Cameron prize in therapeutics to Sir E. Sharpey-Schafer, F.R.S., in recognition of the advances arising out of his discoveries in endocrinology; Ettles scholarship and Leslie gold medal to R. W. Armour, M.B.; Scottish Association for Medical Education of Women prize, Molly B. Wilson, M.B.; Stark scholarship in clinical medicine, D. L. C. Bingham, M.B.; Mouat scholarship in the practice of physic, J. M. M. Steven, M.B.; Buchanan scholarship in midwifery and gynæcology, K. M. Morris, M.B.; James Scott scholarship in midwifery and gynæcology, A. J. Rhodes, M.B.; Beaney prize in anatomy and surgery, R. W. Armour, M.B.; Annandale gold medal in clinical surgery, D. L. C. Bingham, M.B.; Royal Victoria Hospital tuberculosis trust gold medal, D. L. C. Bingham, M.B.; Murdoch Brown silver medal in clinical medicine, K. M. Morris, M.B.; Dorothy Gilfillan memorial prize, Molly B. Wilson, M.B.; Pattison prize in clinical surgery, R. H. Winfield, M.B.; M'Cosh bursary, M. M. Parker, M.B.; Gunning Victoria Jubilee prize in surgery, R. J. Kellar, M.B.; Gunning Victoria Jubilee prize in pathology, C. E. van Rooyen, M.D.; Gunning Victoria Jubilee prize in zoology, Hector Maclean, B.Sc.; Milner Fothergill medal in therapeutics, D. M. Dunlop, M.D.; Thomson memorial medal in child life and health, H. T. H. Arnott, M.B.; and Wightman prize in clinical medicine, J. du T. le Roux, B.Sc.

In an address to the new graduates Prof. A. J. Clark, F.R.S., the promotor, said it was demonstrably untrue that the medical profession destroyed its own livelihood when it advanced knowledge about the prevention and cure of disease. While the death-rate was steadily falling the importance and prestige of the medical profession was as steadily rising. To-day the prevention of disease or its cure at an early stage was becoming the chief function of the doctor, and this was making the practice of medicine both more difficult and more interesting. Medical practice of the future would, he thought, be largely concerned with conditions intermediate between the fields now covered by the sciences of physiology and pathology.

Royal College of Physicians of Edinburgh

At a meeting of the college on July 17th, with Dr. Edwin Bramwell, the president, in the chair, Dr. David Rhys Lewis (Swansea) was introduced and took his seat as a fellow. Dr. John Ronald Currie (Glasgow) and Dr. Alistair Graham Cruikshank (Edinburgh) were elected to the fellowship.

International Association for the Prevention of Blindness

Prof. de Lapersonne presided at a meeting of the executive committee of this association held in Paris, when the activities of the association included the appointment of a commission to discuss the classification of the causes of blindness; among the members are Prof. van Duyse (Belgium), Dr. Mazini Bey (Egypt), Prof. de Lapersonne (France), Mr. Bishop Harman (England), Dr. Marx (Netherlands), Prof. Marquez (Spain), and Dr. Park Lewis (U.S.A.). On behalf of the American Ophthalmological Society and other bodies the Dana medal was presented to Prof. de Lapersonne for his distinguished services in ophthalmology and prevention of blindness. Then followed a meeting of the general assembly in conjunction with the International Organisation for the Struggle against Trachoma. Prof. E. de Grosz (Budapest) spoke, and reports were received of trachoma all over the world from British Colonies (MacCallan), Egypt (Mazini Bey and Tewfik), U.S.A. (McMullen and Rice), Southern Italy (Maggiore), Algeria (Lasmet), Indo-China (Hermant), India (Wright), Greece (Trantas), Dutch Netherlands (Wibaut), and Tunis (Cuenod). The date and seat of the assembly for 1935 were left to be decided later.

Hospital Saturday Fund

The Hospital Saturday Fund collection which takes place on Sept. 22nd will, it is announced, receive an anonymous gift of £1000.

Gordon Hospital, Vauxhall Bridge-road

Hitherto this hospital has never been in debt and has never appealed. Rebuilding and enlargement have now become urgent and it is desired to celebrate the jubilee of the institution by raising £100,000 for the purpose. Sir John Dewar has started the fund with a donation of £10,500.

Carnarvonshire and Anglesey Infirmary

The Princess Royal recently opened a new wing of this hospital which has been erected as a memorial of the late Mrs. Parry Jones, of Cleveland, U.S.A., whose husband has given £12,000 towards the cost. On the same occasion the Princess opened a new light therapy department given by Sir Michael Duff-Assheton-Smith.

Enlarging Shenley Mental Hospital

The county council is already preparing for the enlargement of its new mental hospital at Shenley in Hertfordshire, which was recently opened by the King. Tenders are being obtained for the erection of a second section at a cost of £377,000.

Extension of Kettering Hospital

Lord Henley, chairman of the Northamptonshire public health committee, recently formally opened enlargements of this hospital which have cost £13,000. Two medical wards of bungalow form have been added, with a whole operating theatre block and enlarged accommodation for nurses.

Wigan Infirmary

Last year the Royal Albert Edward Infirmary, Wigan, treated 3669 patients to a conclusion and there were 13,719 new out-patients. The average cost per head was £120 12*s.* 9*d.*, an increase of 9*s.* 8½*d.* Out-patients cost 9*s.* 4*d.* each, an increase of 4½*d.* per head.

West Kent General Hospital

The report for 1933 shows that, thanks to the increase from 1*d.* to 2*d.* per week in the contributions to the pay day fund, the ordinary income increased by about £1700. New in-patients numbered 1670, whose daily cost was 8*s.* 7¾*d.*, a fall of 4½*d.* Their average stay was 19·8 days.

Preston Maternity Hospital

A maternity hospital is to be added to Preston Royal Infirmary, and operations have already been begun. It will be an entirely separate hospital of between 40 and 50 beds, and is estimated to cost £30,000 with an additional £10,000 for nurses' accommodation. There will be two general wards, each of twelve beds, six single-bed wards, an antenatal ward of six beds, and a separate isolation block, in addition to two maternity theatres and a small operating theatre.

Prince of Wales's General Hospital, Tottenham

The provision of better nurses' homes has become so urgent that an appeal is being made for £20,000 that one wing may be begun immediately. The nurses' quarters are officially stated to be "in very bad condition and quite unsuitable." Eventually accommodation will have to be provided for 200 nurses. When the first £2000 has been collected King Edward's Fund will double it, and Sir Alfred Barratt has promised £500 if four other persons will give a similar amount.

Hull Royal Infirmary

Last year the deficit of ordinary income over ordinary expenditure was nearly £7000. There have, indeed, been annual deficits since 1928; and the accumulated debt now verges upon £24,000, and the report says that "the infirmary cannot much longer continue to fulfil its full service under these conditions." There were 5544 in-patients, an increase of 141, but at 15,647 there was a fall of 1400 in the number of out-patients. Patients stayed an average of 21·32 days; their average total cost was £7 18*s.* 3½*d.*, and the weekly cost £2 11*s.* 11¾*d.*

Public Support of Hospitals

A boxing tournament organised by Sir Harry Preston at Brighton in aid of the hospitals and kindred institutions—one of a number during the past 20 years or so—resulted in a sum of £2000 being allocated to eleven institutions. Sir Harry suggests that with a view to impressing the public with the value of the work, every man and woman should be compelled by law to pay a visit to a large hospital once a year.

Hove Home for Blind Women

On July 20th Lord Leconfield opened a new home for blind women at Hove. Known as Wavertree House, it has been purchased and equipped by the National Institute for the Blind. Accommodation is provided for 25 people who have been removed thither from their quarters in Queen's-road, Brighton, and at the home at Clifton, Bristol. The Brighton home is the one where Dr. Moore, the inventor of the Moon alphabet, resided, and it is still being carried on as a centre for the printing of Moon literature, the only one of its kind in the world.

Glasgow Hospital for Sick Children

A fund of £50,000 is being raised for the provision of an orthopædic department, and at the end of last year, the date of the report, £35,000 of the amount had been given. The new buildings will include cots for paying patients. In 1933 there were 5878 new in-patients, 668 of whom were infants under 12 months. The average duration of residence at all ages was 15·5 days, and the daily cost of each patient was 7*s.* 1*d.* The cost of each occupied cot for the year was £129 7*s.* 2*d.* At the end of the year there was a credit balance of £795, attained only by using legacies and special donations. In the preceding year the surplus was £4253.

Congress on Alcoholism

The twentieth International Congress on Alcoholism will be held at the Imperial Institute, South Kensington, London, S.W., from July 30th to August 3rd, when the subjects for discussion will include national surveys of the alcohol problem from educational, economic, medical, legislative, and other points of view; alcohol in relation to motoring and sport; alcohol in relation to heredity and environment; the causes and treatment of inebriety; and the international coördination of temperance work and effort. Addresses will be delivered by Sir William Willcox on the toxicological aspects of alcohol and drug addiction, and Sir George Newman on the teaching of hygiene in schools. Receptions will be given by the president, Lord Rowallan, and others. Membership tickets may be had from the Secretariat, Room H, Imperial Institute.

Donations and Bequests

In addition to other contingent bequests, the late Charles H. Baxter, of Winchelsea, left, on the death of all his brothers and sisters, £1000 to the Royal Waterloo Hospital for Children and Women, £500 to the Royal East Sussex Hospital, Hastings, and the same amount of money to the Central London Ophthalmic Hospital.—The late Miss Laura J. Crabb, of Tunbridge Wells, left, among other bequests, £1000 upon trust for the upkeep of the churchyard of the Parish Church of Great Baddow, Essex, or, failing this, to the Chelmsford and Essex Hospital and Dispensary; £5000 to the Church Missionary Society for Africa and the East, for medical work; £20,000 to the Church of England Zenana Missionary Society; £1000 to the Tunbridge Wells General Hospital; £1000 to the Chelmsford and Essex Hospital and Dispensary; £250 to the Eye and Ear Hospital, Tunbridge Wells; and £250 to the Convalescent Home for Children, Hawkenbury, Tunbridge Wells.—The late Mr. Charles Henry Garton, of Banstead, among other bequests, left £5000 to the Royal South Hants Hospital; £2000 to the Bolingbroke Hospital; £2000 to the London Hospital; £2000 to the Westminster Hospital; £2000 to the Epsom and Ewell Cottage Hospital; £1000 to the Moorfields Eye Hospital; and £500 to the Free Eye Hospital, Southampton.—By the will of the late Mr. John Braund, of Exmouth, the Exmouth Cottage Hospital will benefit by £2000. The late Mrs. Jane Elizabeth Oliver, of Bowdon, Cheshire, left among other bequests £1000 to Ancoats Hospital, for general purposes, and a further £1500 for the endowment of a bed, to be known as "High Croft Bed."

A Stretcher for Railway Journeys

A Great Western Railway carriage cleaner at Taunton has designed a new type of stretcher suitable for use on railways. The ordinary standard stretcher is too wide to pass through carriage doors so that invalids have to be lifted into and from the compartment, or conveyed in the guard's van. The new stretcher, which is slightly narrower, is fitted with a removable "shock absorber" bed, and has an attachment for holding an adjustable bedrest and handles that slide in flush with the ends. It can also be quickly fixed to or removed from any standard stretcher fitted in ambulances or those used in hospitals, and a cross-rail at each end serves as an extra means of carrying short distances and in confined spaces or negotiating passage corners. The "Parratt" stretcher, as it is named after the designer, has been patented on his behalf by the G.W.R., and will be available at its principal stations, and also, on demand, at any station for any journey.

Rickets at Manchester

The report of the Manchester Babies' Hospital for the year ended on March 31st last shows the usual diminution in the number of cases of true rickets sent for admission. The percentage fell from 21·42 in 1924 to 4·99 in 1933. This is thought, however, not to be an exact picture of the diminution of rickets in the city, since rickets is still prevalent during certain periods of the year among children not attending welfare centres and in charge of indifferent mothers. There is a decrease where the children are under medical observation. There were 517 admissions, and the average stay was 51·59 days. A new nurses' home to house 30 nurses is to be built at a cost of £10,000. Moreover, it is felt that the hospital can no longer remain efficient without an operating theatre. The X ray department is too small for modern apparatus, the massage and sunlight departments are insufficient to cope satisfactorily with the increased work, and the great number of biochemical, bacteriological, and pathological tests necessitates a larger laboratory.

Royal Manchester Children's Hospital.

A grant of £20,000 has been made to this hospital by the trustees of the late Mr. Zachary Merton for the building of a new convalescent home. It will be erected beside the hospital, and an appeal will shortly be issued for £100,000 to endow the 40 beds.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 14TH, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 2 (last week 1); scarlet fever, 2343; diphtheria, 1152; enteric fever, 27; acute pneumonia (primary or influenzal), 579; puerperal fever, 38; puerperal pyrexia, 100; cerebro-spinal fever, 23; acute poliomyelitis, 9; acute polio-encephalitis, 2; encephalitis lethargica, 9; continued fever, 1 (Cambridge); dysentery, 14; ophthalmia neonatorum, 86. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 23rd-24th was as follows: Small-pox, 0; scarlet fever, 1667; diphtheria 1529; measles 894 (last week 1061); whooping-cough 296; puerperal fever, 24 mothers (plus 5 babies); encephalitis lethargica, 269; poliomyelitis, 2; "other diseases," 231. At St. Margaret's Hospital there were 16 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 16 (4) from measles, 5 (1) from scarlet fever, 13 (1) from whooping cough, 39 (8) from diphtheria, 39 (13) from diarrhœa and enteritis under two years, and 9 (0) from influenza. The figures in parentheses are those for London itself.

Of the deaths from measles 3 were reported from Sheffield 2 from Stoke-on-Trent. Whooping-cough was fatal in three cases at Liverpool. Diphtheria caused 3 each at Portsmouth, Kingston-upon-Hull and Birmingham. Four fatal cases of diarrhœa were reported from Birmingham, 3 from Liverpool, 2 from South Shields.

The number of stillbirths notified during the week was 249 (corresponding to a rate of 39 per 1000 total births), including 42 in London.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, July 30th to SATURDAY, August 4th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Tues., at 2.30 P.M., lecture-demonstration (illustrated by cases) on Sciatic Pain, by Dr. A. E. Clark-Kennedy.—PANEL OF TEACHERS. Individual clinics in various branches of medicine and surgery available daily.—Courses, demonstrations, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

Appointments

MILLER, A., F.R.C.S. Edin., has been appointed Hon. Surgeon in charge of the Ear, Nose, and Throat Department, French Hospital.

Certifying Surgeons under the Factory and Workshop Acts; EDGAR, W., M.B., Ch.B. Glasg. (New Cumnock, Ayrshire); VINCENT, E. W., M.B., Ch.B. Leeds (Filey, Yorks.).

Vacancies

For further information refer to the advertisement columns

Accrington, Victoria Hospital.—H.S. £150.

Ashton-under-Lyne District Infirmary.—H.S. At rate of £150.

Barnsley, Beckett Hospital and Dispensary.—H.P. £200.

Bath and Wessex Children's Orthopædic Hospital, Combe Park.—Res. Asst. Surgeon. £350.

Birmingham, Monyhull Colony Certified Institution.—Jun. Asst. M.O. £350.

Bolton Royal Infirmary.—Res. Surg. O. £250. Also Asst. Res. Surg. O. £200.

Bootle General Hospital,—H.P., 2 H.S's., and Cas.O. Each at rate of £150.

Bradford Royal Infirmary.—H.P. and Two H.S.'s. Each at rate of £135.

Brighton, New Sussex Hospital for Women and Children.—H.S. £100.

Cancer Hospital, Fulham-road, S.W.—Clin. Asst. £250.

Cardiff Royal Infirmary.—Hon. Physician.

Central London Ophthalmic Hospital, Judd-street, W.C.—Chemical Pathologist. £105.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Assts. in Out-patient Dept.

Charing Cross Hospital, W.C.—H.P. to Radiological Dept. At rate of £50.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

Colchester, Essex County Hospital.—H.P. £150.

Connaught Hospital, Walthamstow, E.—Res. M.O. At rate of £150.

East Lancashire Tuberculosis Colony, Great Barrow.—H.P. At rate of £100.

Edinburgh Royal Infirmary.—Radiologist. £1500.

Exeter, Royal Devon and Exeter Hospital.—Hon. Asst. Surgeon. Also H.S. to Ear, Nose, and Throat Dept. At rate of £150.

Evelina Nospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.

Gloucester, Gloucestershire Royal Infirmary, &c.—Hon. Ear, Nose, and Throat Surgeon.

Great Yarmouth General Hospital.—H.S. £140.

Grimsby County Borough.—M.O.H. £1000.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Leeds Maternity Hospital, Hyde-terrace.—Second H.S. At rate of £50.

Liverpool, David Lewis Northern Hospital.—Cas. O. At rate of £120. Four H.S.'s, Two H.P.'s. Each at rate of £80. Also H.S. to Gynæcological and Ear, Nose, and Throat. At rate of £80.

Liverpool Heart Hospital, Oxford-street.—Research Fellowships.

Liverpool, Royal Southern Hospital.—Two H.P.'s, Three H.S.'s, M.O. to Special Depts., and Res. Anæsthetist. Each at rate of £60. Also Res. Cas. O. At rate of £100.

Llanelly and District Hospital.—H.S. £150.

London Jewish Hospital, Stepney Green, E.—Cas. O. At rate of £150.

London University.—University Chair of Medicine. £2000. University Chair of Pathology. £1200. University Readerships. Each £800.

Manchester, Ancoats Hospital.—H.P., and H.S. Each at rate of £100. Surg. Reg. and Orthopædic Reg. Each £50. Also Hon. Gynæcologist.

Manchester, Booth Hall Hospital.—Asst. M.O.'s. Each £200.

Manchester Centre, National Radium Commission Scheme.—Asst. Radium Reg. £400–£500.

Manchester, Monsall Hospital for Infectious Diseases.—Jun. Res. Asst. M.O. At rate of £250.

Manchester, Royal Eye Hospital.—Jun. H.S. £120.

Middleton-in-Wharfedale Sanatorium, near Ilkley.—Res. M.O. £250.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Jun. Res. M.O. At rate of £100.

Near Pontefract, Ackworth School.—Part-time M.O.

Newcastle General Hospital.—Two H.S.'s and H.P. Each at rate of £150.

Norwich, Jenny Lind Hospital for Children.—Jun. Res. M.O. £100.

Norwich, Norfolk and Norwich Hospital.—H.S. to Spec. Depts. £120.

Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital.—Two H.S.'s. Each at rate of £200.

Queen Mary's Hospital for the East End, E.—Asst. Pathologist. £400. Anæsthetist. Locum Tenens. 4 gns. a week.

Queen's Hospital for Children, Hackney-road, E.—H.S. and Cas. O. Each at rate of £100.

Royal Eye Hospital, St. George's-circus, Southwark, S.E.—Hon. Asst. Surgeon.

Royal London Ophthalmic Hospital, City-road, E.C.—Refraction Asst. £100.

Royal Naval Medical Service.—Ten M.O.'s.

Salisbury General Infirmary.—H.P. At rate of £125.

Sheffield Children's Hospital.—H.S. and H.P. Each at rate of £100. Also Res. M.O. £175.

Sheffield, Jessop Hospital for Women.—Asst. Reg. and Obstet. Tutor. £400. Also H.S. At rate of £100.

Sheffield Royal Hospital.—Res. Surg. O. £200.

Shrewsbury, Royal Salop Infirmary.—Cas. O. and Res. Anæsthetist. At rate of £160.

South-Eastern Hospital for Children.—Jun. Res. M.O. At rate of £100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Ophth. Surgeon.

Sutton and Cheam Hospital.—Hon. Radiologist.

Swansea General and Eye Hospital.—H.P. At rate of £150.

Tunbridge Wells, New Kent and Sussex Hospital.—Sen. and Jun. H.S. £175 and £125 respectively.

Torquay, Torbay Hospital.—H.P. and H.S. Each £175.

Warrington County Mental Hospital, Winwick.—Deputy Med. Supt. £750.

Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £150.

Wolverhampton Royal Hospital.—H.S. for Orthopædic and Fracture Dept. At rate of £100.

Worcestershire Mental Hospital, Barnsley Hall, Bromsgrove.—Second Asst. M.O. £350.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at East Grinstead, Sussex.

Births, Marriages, and Deaths

BIRTHS

HARWARD.—On July 20th, at Odiham, the wife of Dr. R. L. Harward, of a daughter.

JONES.—On July 21st, at Welbeck-street, W., the wife of Arthur Rocyn Jones, F.R.C.S., of a daughter.

MILLER.—On July 21st, at Welbeck-street, W., the wife of Dr. Emanuel Miller, of a son.

ROBINSON.—On July 19th, the wife of Geoffrey Lawrence Robinson, M.B., of a daughter.

MARRIAGES

LYLE—HUGHES.—On July 21st, at Westerham Parish Church, Kent, Eric H. Willoughby Lyle, M.A., M.B., B.Ch., D.O.M.S., to Elizabeth E. Hughes, younger daughter of the late F. R. Hughes and of Mrs. Hughes, formerly of Hale, Cheshire.

DEATHS

CROSS.—On July 14th, at his residence, Clay Point, Flushing, Falmouth, Cornwall, William Foster Cross, M.R.C.S. Eng., L.R.C.P. Lond., consulting anæsthetist to St. Bartholomew's Hospital, London, aged 61.

MACKENZIE.—On July 19th, at Sedgford House, Underdale-road, Shrewsbury, Allan Grant Mackenzie, M.D., M.R.C.P., F.R.C.S., aged 79.

MAYOU.—On July 20th, at Portland-court, Marmaduke Stephen Mayou, F.R.C.S., of Harley-street, and Alison House, Camberley, aged 58.

ROUSE.—On July 17th, at Thalassa, Farncombe-road, Worthing, Algernon Edward Rouse, M.R.C.S., L.R.C.P., in his 62nd year.

WARING.—On July 21st, at Birmingham, after a short illness, Charles John Waring, M.R.C.S., L.R.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

A STUDY OF THE UNSTABLE BOY

BEING AN INVESTIGATION OF 120 CONSECUTIVE CASES AND AFTER-HISTORIES

By Muriel Barton Hall, M.D.

HONORARY PHYSICIAN TO THE LIVERPOOL PSYCHIATRIC CLINIC

During a review of 1300 consecutive cases of early mental, nervous, and behaviour disorders seen at the Liverpool Psychiatric Clinic during the past ten years it was found that 407 were patients in the second decade, 120 of these being male and the remainder female. The discovery that 31 per cent. of the cases were adolescent when first seen at the clinic suggested that an analysis of the case sheets and a comparison with the subsequent histories of these cases might reveal information of interest from the points of view of ætiology, diagnosis, and prognosis.

The following details are those of 120 unselected male adolescents who were between the ages of 10 and 19 years inclusive when first seen at the clinic, and with whom, with the exception of three cases, it has been possible to get into touch either directly or through a psychiatric social worker, within the past three months.

Findings

Of the 120 cases, 62 were referred to the clinic by doctors, 33 by social agencies, 21 by public authorities, and 4 from other sources. Seventy-five were referred because of nervous symptoms, 45 because of a behaviour disorder. After investigation the cases were divisible into five main groups according to their most prominent feature, as follows :—

Psychoneurosis	51
Behaviour disorder	25
Intellectual deficiency	24
Physical disorder	14
Psychosis	6

For the purpose of this paper, the term behaviour disorder signifies a condition of abnormal behaviour from the causation of which mental, nervous, physical, or intellectual factors could be excluded.

The factor of general intelligence was investigated in detail. Classification of the cases according to five grades of intellectual development resulted in Table I. :—

TABLE I.—*Classification according to Intelligence Quotient*

Intelligence.	I.Q.	Cases.
Very superior	Over 130	0
Superior	110–129	12
Average	90–109	47
Inferior	70–89	36
Very inferior	Under 70	25

In Table II. these findings are reviewed in relation to the diagnosis.

TABLE II.—*Intelligence and Type of Disorder*

—	Psychoneurosis.	Behaviour disorder.	Intellectual deficiency.	Physical disorder.	Psychosis.
Superior ..	9	1	—	1	1
Average ..	31	5	—	8	3
Inferior ..	11	19	—	5	1
Very inferior ..	0	0	24	0	1
Totals ..	51	25	24	14	6

The factors of heredity and environment were onsidered, and their significance in relation to the ases under investigation is seen in Table III.

Of the commoner factors in the heredity, psychoneurosis occurred 26 times, immorality 12 times, alcoholism, insanity, mental deficiency, and epilepsy each 10 times, tuberculosis and violent temper each 8 times. Suicide was twice revealed in the family histories. Two of the patients were known to be illegitimate.

TABLE III.—*Heredity, Environment, and Type of Disorder*

—	Abnormal heredity.		Family group.	
	Absent.	Present.	Normal.	Abnormal.
Psychoneurosis ..	19	32	37	14
Behaviour disorder ..	4	21	9	16
Intellectual deficiency	10	14	16	8
Physical disorder ..	12	2	12	2
Psychosis	1	5	3	3
Totals	46	74	77	43

Environmental factors are always difficult to assess, but in this investigation attention was paid to any factor which appeared to have disturbed the normal relationship of the family group during the patient's childhood. Loss of one parent had occurred in 22 cases—by death 13 times, by desertion 5 times, by separation twice and by divorce twice. In 21 cases there were substitute parents—namely, 7 step-parents, 6 relatives, 1 foster parent, while 7 cases had been brought up in orphanages.

Treatment and After-history

Fifty-four cases were considered as suitable for treatment by psychological methods of approach, but this was actually undertaken in only 36 cases, the remaining 18, owing to distance or hours of employment, being unable to attend the clinic with sufficient regularity. The other 66 cases were considered unsuitable for treatment at the clinic. In each of them, however, recommendations were made to the doctor, the social worker, or the public authority official concerned with the patient's future handling either in his own home or, where necessary, in some other environment.

The relative suitability of cases for treatment is shown in Table IV.

TABLE IV.—*Diagnosis and Suitability for Treatment*

—	Suitable.	Unsuitable.
Psychoneurosis	45	6
Behaviour disorder	4	21
Intellectual deficiency ..	2	22
Physical disorder	0	14
Psychosis	3	3
Totals	54	66

The number of cases in the present series is too small to warrant any statement as regards the result of psychological treatment. The two cases of intellectual deficiency that were considered suitable for treatment were also suffering from a psychoneurosis.

In each case an effort was made to obtain an after-history concerning the patient's progress as regards symptoms and employment since his last attendance at the clinic. In 3 cases this was impossible because the family could not be traced. In 24 the after-history was less than 12 months in duration, a period which is considered not long enough to warrant inclusion in the series. In the remaining 93 cases the after-histories obtained cover periods varying from one to nine years in duration as follows :—

Years	.. 9	.. 8	.. 7	.. 6	.. 5	.. 4	.. 3	.. 2	.. 1
Cases	.. 6	.. 8	.. 7	.. 9	.. 4	.. 12	.. 14	.. 12	.. 21

The patients' condition as revealed by these 93 after-histories is shown in Table V.

TABLE V.—*After-histories*

—	Complete recovery.	Partial recovery.	No change.	Deterioration.	Death.
Psychoneurosis	18	12	10	1	0
Behaviour disorder ..	7	5	4	5	0
Intellectual deficiency ..	3	0	8	2	1
Physical disorder.. ..	3	2	1	4	3
Psychosis	0	1	2	1	0
Totals	31	20	25	13	4

In the three cases of intellectual deficiency in which complete recovery is recorded, this statement referred to behaviour or nervous symptoms and not to the inherent defect. Of the 13 cases which showed deterioration, 2 were in prison, 1 had a warrant out for his arrest, 2 were in Borstal institutions, 1 was in a reformatory, 1 was on probation with condition of residence, 1 was in a mental hospital, 4 were chronic invalids suffering from epidemic encephalitis, and 1 was an inmate of an epileptic colony.

The relationship between the disorder and ability to obtain employment as revealed by the after-histories is set out in Table VI.

TABLE VI.—*Occupations*

—	Regular employment.	Irregular employment.	Unemployed.	Unemployable.	Still at school.
Psychoneurosis	17	10	4	1	9
Behaviour disorder ..	8	3	6	4	0
Intellectual deficiency ..	4	0	1	8	0
Physical disorder.. ..	3	0	1	6	0
Psychosis	0	1	0	3	0
Totals	32	14	12	22	9
	89				
	+ 4 deaths = 93.				

Conclusions

1. The diagnosis in such cases is not always pointed by the symptoms as referred. A total of 75 cases were sent with nervous symptoms, whereas only 51 were actually found to be suffering primarily from a psychoneurosis. Similarly, 45 cases were sent on account of a behaviour disorder, yet in only 25 of these was the behaviour disorder uncomplicated by either physical, intellectual, nervous, or mental disorders. The importance of diagnosis as a function of the psychological out-patient clinic is evident.

2. Investigation of intellectual development in this series revealed a surprising number of cases in which the intelligence quotient was below 70. Although in a few of these cases the patient was known to be very backward, in the great majority this was not the case, the gross deficiency having been overlooked, the boy being regarded as lazy and unwilling rather than incapable. The significance of this group of sub-normals and the problem which they present cannot be over-estimated in view of the fact that they are daily being allowed their freedom and entrusted with responsibilities which they are quite incapable of undertaking. Liability to develop either nervous symptoms or a behaviour disorder accounts for the relatively high percentage found in this series.

3. In the psychoneurotic group of cases the intelligence quotient graph is normal, rising to a peak at average, and falling evenly on each side to superior and inferior respectively. In the cases of behaviour disorder, on the other hand, 76 per cent. are of inferior intelligence, and this factor cannot be overlooked as an important contributory cause.

4. Hereditary factors appeared to play a large part in causation of adolescent instability, being present in 62 per cent. of this series. The behaviour disorder group is too small to base deductions upon, but it is noteworthy that four-fifths of these cases showed hereditary factors. The relative absence of neuropathic hereditary factors in the physical disorder group is of interest particularly when it is realised that the two cases in which it appeared were cases of idiopathic epilepsy.

5. The only group of cases in which an abnormal family group occurred more frequently than a normal one was that of the behaviour disorders. It is probable that such a situation leads to faulty or irregular control and that it is an important predisposing factor in abnormal behaviour.

6. The proportion of adolescent cases in which active psychological treatment is necessary is comparatively small. Indirect treatment, whereby recommendations for the patient's future handling are put into practice by the referring agent, achieves satisfactory adjustment in a further proportion of cases.

7. Recovery or partial recovery from adolescent instability is most likely to take place in the psychoneurotic group of cases. Of those in this group who showed no change after a period of years, the majority were cases of stammering that had remained untreated.

8. Cases of adolescent psychoneurosis do not tend to deteriorate. In no case in this group of the series had a psychosis supervened.

9. With regard to the matter of employability of the unstable adolescent, while psychoneurosis does not appear to prejudice the patient's opportunities, cases falling into the other groups of disorder are at a disadvantage in this respect.

MESMER

Margaret Goldsmith describes her biography of Mesmer[1] as the history of an idea, but it would be truer to call it the history of a man who unexpectedly stumbled on a new technique. He used it enthusiastically, but was not the sort of man to make a critical analysis of his own findings.

Born in 1734 at Ignanz, Mesmer was destined by his parents for the Church, and did not qualify in medicine until he was 31, when his graduation thesis discussed the influence of the planets upon the human body. Marrying a woman ten years his senior he settled down to a humdrum life in Vienna, enlivened by musical evenings, and it was not until he was 40 that he began to take an interest in the practices of a Jesuit priest, Father Maximilian Hell, who was curing people with magnets. Hell was not the first exponent of this method, which had been used by Paracelsus two centuries before, nor of hypnotism which was even then being used by Gassner the exorcist. Mesmer employed magnets with outstanding success on some of his hysterical patients, but presently decided that they were not essential to the cure; he could magnetise objects himself and so produce the same results. He came to the conclusion that a magnetic fluid flowed directly from him into the patient, and he attached much importance to passes made with the hands. He also discovered that it was necessary for the patient to want to be cured—there must be rapport between patient and physician.

By 1775 Mesmer had created an enormous sensation in Austria and Germany. His garden was full of magnetised trees and ponds, his patients slept in magnetised beds and read magnetised books, and he believed honestly that the magnetic attraction of the planets permeated all parts of our bodies as an active force. Thirty persons could be magnetised at a time, sitting round a wooden trough containing bottles of water magnetised by his hands and grippin g flexible iron rods. The room was darkened, the whole business reeked of hocus-pocus, and yet it was conducted by a man with the most implicit confidence

[1] Mesmer: The History of an Idea. By Margaret Goldsmith. London: Arthur Barker, Ltd. 1934. Pp. 276. 10s.

in its value. Soon it was reported that some of Mesmer's patients during their cures carried out instructions while apparently in a state of unconsciousness or somnambulism. Miss Goldsmith shows how his notoriety roused the enmity of his colleagues, and how finally his undeserved failure to cure Maria Theresa von Paradis, the pianist, of her functional blindness was made an excuse for driving him from Vienna. He went to Paris where much the same history was repeated. The French Academy of Sciences was not impressed by his vague and unsubstantial memorandum upon animal magnetism. He acquired a considerable practice, but was despised by his medical colleagues. A commission appointed to inquire into his methods, though it included such men as Benjamin Franklin and Lavoisier, decided that all the effects of animal magnetism were due to the excited imagination of the patients. The names of a few practitioners who had adopted Mesmer's technique were struck off the official register, but a large number of lay people began to practice "mesmerism," and some began to treat the patient in a trance as a kind of oracle who could diagnose the diseases of others. During the French Revolution Mesmer was forced to emigrate, and for some years wandered from Germany and Austria to Switzerland, and back to France. His last years were spent in Switzerland in a forgotten retirement.

GUIDE TO OFFICIAL STATISTICS

FOR the twelfth year the consultant committee, of which Sir Alfred Watson is chairman, has issued a guide to current official statistics of the United Kingdom, and as time goes on the survey increases in value and completeness. There is a system of cross references by following which it is possible to discover all official publications of the year which contain statistics bearing on a particular subject. Moreover, the inquirer will know in advance the nature of the statistics he will find: that is to say, their mode of analysis, and the time and place to which they relate. The modest price of this volume is one shilling, from H.M. Stationery Office or through any bookseller.

OSLER AS PARASITOLOGIST

Sir William Osler's early contributions to parasitology are not as well known in this country as his researches in clinical and historical medicine, so that an article on this subject by Dr. Thomas W. M. Cameron, of McGill University, in the *Canadian Medical Association Journal* (1934, xxx., 553) will attract many readers. Inspired by his headmaster, the Rev. W. A. Johnson, the young Osler first turned to biology and parasitology. In 1870 he became interested in trichinosis, which at that time was little known in America, and he appears to have been the first to point out the characteristic eosinophilia. "Most cases even to-day," Dr. Cameron writes, "are diagnosed as enteric fever until Osler's tell-tale eosinophilia reveals their true nature." Osler's interests were not limited to human helminthology, for he early appreciated the importance of comparative study. "He was, in fact, one of the first sponsors of that youngest branch of medicine which we now call comparative medicine." It is worth mentioning that a worm occurring as a parasite in the gills of the newt is named *Sphyranura osleri*, nov. gen. et sp. In 1877 a form of pneumonia broke out among the pups of the Montreal Hunt Club. Osler succeeded in isolating from the respiratory passages parasitic worms, which he termed *Strongylus canis bronchialis*, subsequently renamed by Cobbold *Filaria osleri*. The genus is now known as *Oslerus osleri*. In April, 1886, he sketched the amœboid stage of the malarial parasite, but he at first failed to recognise the parasite as the cause of the disease. The commencing chapters of Prof. Harvey Cushing's comprehensive life of Osler have full references to Osler's early work in parasitology, and to the influence upon the young biologist of James Bovell and Johnson.

A JOINT COMMITTEE ON VOLUNTARY STERILISATION

ON July 18th the Mental Hospitals Association at its annual meeting accepted by a large majority an invitation of its executive committee to approve of the findings of the Departmental Committee on Sterilisation and of the appointment of representatives to a joint committee to urge action on the Government. Associated with this body in a Joint Committee on Voluntary Sterilisation are the Central Association for Mental Welfare, the National Council for Mental Hygiene, and the Eugenics Society. The County Councils Association is sending three of its members to attend the meetings of the joint committee, but without power to commit that body to any opinion or course of action. A sub-committee has been appointed to draft a Bill to legalise voluntary sterilisation to be submitted to the constituent organisations. The offices of the Committee are at 69, Ecclestonsquare, London, S.W.1.

ALCOHOLISM IN RUMANIA

THE increase in alcoholism in Rumania, especially in the rural districts, has recently received attention in two Paris theses. Dr. Moses Froim, whose thesis (1934, No. 358) is entitled the Medico-Social Problem of Alcoholism in Rumania, states that its most striking feature is the spread of the habit to women and children. The inertia of the public authorities has allowed a rapid increase in the number of drinking shops, three out of four of which have been opened since the war. The results have been medically a high morbidity and mortality, both among young children and adults of both sexes; socially a large number of accidents, crimes, and minor offences, as well as a deterioration of family life; and economically a considerable fall in agricultural and industrial production and consequent impoverishment. He estimates that the government which derives two thousand million lei from the taxes on alcohol has to spend five times as much to remedy its disastrous results. The proposals he makes include prohibition of spirits, substantial increase in the taxes on wine and beer, reduction in the number of public houses and their replacement by non-alcoholic restaurants, and an attempt to improve the intellectual, musical, and athletic education of the people. Dr. Isaac Reicher, whose thesis (No. 361) deals with the sanitary organisation in the rural districts of Rumania, also testifies to the increase in alcoholism since the war, with a consequent rise in the frequency of accidents, crimes, suicides, and mental diseases.

OXYGEN FOR ULCERATIVE COLITIS

A TYPICAL case of severe ulcerative colitis in which good results were obtained by means of oxygen injected directly into the bowel is reported by J. C. Etchevés (Semana méd., 1934, xli., 1709). The patient, a young man, had been treated for two and a half months quite unsuccessfully by other methods and was becoming worse. Treatment had included rest in bed, careful dieting, hot applications to the abdomen, colonic lavage with silver nitrate, flavine, and other solutions; various drugs by mouth; subcutaneous injections of emetine, coagulin, calcium, &c. It was then decided to try the effect of oxygen. By means of a rectal tube connected with a cylinder of oxygen the gas was run directly into the bowel until the patient began to feel distended. This procedure was carried out twice a day for three weeks. The patient quickly began to improve and at the end of the course of treatment was well on the way to recovery. A year later he was re-examined and found to be in good health and able to eat anything.

THE telephone number of the head offices of Messrs. Burroughs Wellcome and Co., Snow Hill Buildings, London, E.C.1, has been changed to Central 4000.